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Universities Quarterly

VOLUME 2 NUMBER 1

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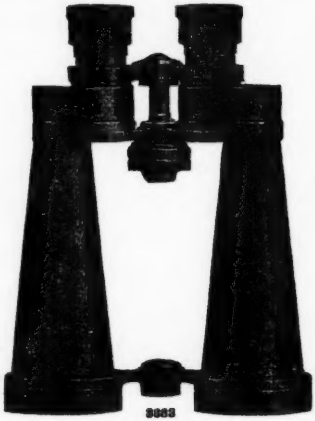

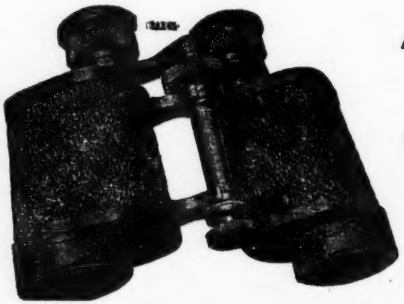

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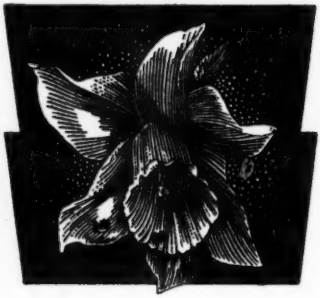

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EDITORIAL NOTES

THE CRISIS AND THE UNIVERSITIES

It may take a little time for the effects of the present economic crisis to reach the universities, but reach them it surely must. It is therefore urgent that the universities should be preparing a vigorous defence of their plans for expansion, and that if any reductions in their programmes are unavoidable, these should be limited to the minimum. Quantitatively the capital grants given to the universities are very small compared to expenditure on other services such as schools or health; since, however, all existing plans of capital expenditure for industry, housing and the social services are being reviewed, this review will cover the universities as well.

It must, however, be stressed that expenditure on university education is an outstandingly rewarding investment for the nation and the Chancellor of the Exchequer has shown himself to be very sympathetic towards the universities. There seems no reason why the recurrent grants should be affected by the crisis since they do not use manpower or resources which could be used more advantageously elsewhere. In the field of capital expenditure, however, it may be that halls of residence and some other building schemes will have to go lower on the list of priorities. Teaching facilities which cannot be met by double banking or other such methods ought not to be sacrificed.

Of the £40 million of new capital expenditure asked for over the next five years it was thought some months ago that only about £20 million would be achieved, and that this was the barest minimum compatible with the desired expansion in numbers. If reductions are imposed they will have to be very carefully adjusted, since it is essential that the targets for increasing numbers should not be lowered. The nation needs every trained man and woman it can get. A longer period of austerity may not do the universities much harm, but there must be no check to the flow of scientists, teachers, managers and administrators who are vital for Britain's recovery. What is lacking in total numbers must be made up by quality, and it would be the height of folly to starve the means for producing this quality.

HOME UNIVERSITIES CONFERENCE

At the Home Universities Conference called by the Vice-Chancellors at the end of September there was some effective discussion devoted to the subject of university planning, thanks largely to the wise guidance of the Chairman—Sir Hector Hetherington—the retiring President of the Committee of Vice-Chancellors. Lord Simon of Wythenshawe opened the discussion with a paper describing the rapid development of planning machinery for the universities during the last few years. This machinery consists—on the part of the universities—of the individual university and the Vice-Chancellors' Committee; and—on the part of the Government—of the University Grants Committee, which distributes the government grant and is charged to ensure that the universities " shall be fully adequate to the national needs."

But planning, and the thinking on which it should be based, are different things. Both Sir Hector Hetherington and Sir Walter Moberly pointed out, and their view was endorsed by the conference, that to be compatible with the freedom essential to a university, the body responsible for planning must have as a background a live and articulate public opinion derived from the views of those actually engaged in running the affairs of individual universities. University staffs are heavily loaded with daily duties and it is difficult to get a serious discussion in most Senates on fundamental questions. As an example of the kind of thing which universities do not usually discuss, we may quote a revolutionary suggestion made in the course of the conference by Professor Bartlett, that perhaps universities should educate only students likely to add to knowledge, leaving all others to technical or professional colleges.

General agreement emerged that the existing planning organisations were adequate and that it would be undesirable to add a Joint Universities *Council* with any planning responsibility. On the other hand, it was felt that an annual universities *Conference* on the general lines of the present conference, whose functions would be confined to discussion and the exchange of ideas on university purposes and policies would be valuable. Lord Chorley, President-Elect of the Association of University Teachers, expressed agreement with this proposal, and Sir Hector Hetherington promised to bring the matter before the Vice-Chancellors' Committee.

For the conference to become an important channel for the opinions of those actively concerned with university life, and for it to develop into a body which can stimulate the discussion of ideas in individual universities and encourage a real drive being put behind particular reforms, its machinery should be such as to bring together people of very varying ideas. Adequate preparation for the conference must be made, and would involve preliminary discussions in individual universities and inter-university discussions on special matters such as those affecting any particular faculty. It would also be an advantage if the universities were permitted to send up to four more additional representatives to attend particular sessions, since it is impossible for the four who now attend to be experts on all the subjects raised.

There was an evident desire that the Vice-Chancellors' Committee should continue to call the conference, but it would appear that its staff may have to be reinforced in order to obtain the best kinds of preparation, the most stimulating discussions and the most satisfactory results.

SELECTION OF STUDENTS

That the pressure for entry to the universities is causing some vigorous thinking about the basis of selection of students was also demonstrated at the same conference. The old procedures by which students were selected mainly on the basis of written examinations set by bodies outside the universities is breaking down under the weight of numbers, and even the barrier of the Higher School Certificate is letting through more candidates than the universities can absorb or set in a proper order of merit for selection. In 1939 there were 10,000 successful candidates in the Higher School Certificate : in 1946 there were 16,700, and the number is increasing.

The problems which this rising tide of applicants is setting the universities were admirably outlined by Dr. Mountford, Vice-Chancellor of Liverpool University. Selection can be by examination, recommendation, intelligence tests or interview, or a combination of these. All the methods are at present inadequately used and all could be improved. Standards of marking vary greatly between the different school examination boards, so that confidential information supplied by the boards to the universities does not provide a reliable order of merit. At present recommendations by

the schools are largely formal, but a well framed questionnaire from the university can elicit valuable information about the relative merits of candidates from the same school. Intelligence tests are still in the experimental stage in this country, but are now widely used in America, where the numbers involved are so large as to make the marking of normal examination papers an impossible burden. There a combination of tests to assess capacity and attainments are combined with a scrutiny of school records and an interview in doubtful cases. In this country the interview is rarely properly conducted. It is a highly skilled technique requiring experience and special qualities of judgment: badly used it is a dangerous expedient and Dr. Mountford suggested that much could be learned from studying the methods used by the Services and the Civil Service during and since the war.

It was particularly interesting to find that neither Dr. F. C. Bartlett who took the chair, nor Professor Godfrey Thompson who opened the session, considered that intelligence tests were yet a satisfactory method for selecting students, but only the refuge of those made desperate by numbers. As both these speakers have exceptional experience of this method, great weight must be attached to their opinions.

A plea was made for a more generous entry in the first year with a stiff process of weeding out at the end of it, since the present Higher School Certificate examination does not give sufficient guidance as to future capacity. Research at Bristol University had shown, for instance, that a considerable number of those low in the pass lists for Higher School Certificate gained firsts in their final degrees and *vice versa.*

Since for many years ahead demand for university places will be in excess of supply, the problem of selecting those students who will benefit themselves and the country most is an extremely important one, and it was encouraging to find that so much thought and experimental work was being devoted to the subject.

PROGRESS ON THE McNAIR REPORT

It is now possible to assess to some extent the response of the universities to the proposals of the McNair Report that they should undertake a greater measure of responsibility for the training of

teachers. The idea of their doing so aroused apprehensions, some reasonable, some founded on misconceptions—that the universities would be swamped with inferior teachers in training, that the Ministry of Education would begin to gain control in the universities, and so on. The Ministry very properly left it to each university to make the decision for itself, and as a result, the following universities and university colleges have announced their willingness to establish Schools or Institutes of Education :— Birmingham, Bristol, Durham, Hull, London, Manchester, Nottingham, Southampton, the University College of the South-West and the University of Wales. University Institutes have already been set up at Birmingham, Bristol and Nottingham. The Universities of Cambridge, Leeds, Liverpool, Reading and Sheffield have not accepted responsibility as area training authorities but are willing to co-operate with training colleges and local education authorities in establishing joint institutes.

The Birmingham and Bristol schemes give some idea of how the University Schools or Institutes will work. The Institutes of these two universities will have governing bodies, responsible to the universities, representing in the one case sixteen local education authorities and nine colleges and in the other six authorities and nine colleges. Each Institute will award one common professional qualification, a certificate, which the Ministry of Education will accept. There will be some sharing of staff, and co-operation in research, and the Institutes will provide facilities for study by serving teachers and others. The constituent colleges will retain their administrative and financial anatomy, but the Institutes will be financed through the University Grants Committee.

Progress with the London scheme has been delayed by difficulties which have arisen in connection with the rights of inspection to be exercised by the Ministry over the professional courses conducted in the university departments and in the Colleges which may be associated with the University. The University took the view that this was a matter vitally affecting the freedom of university teaching. The University itself deliberately refrains from inspecting the lectures given by its own university teachers. Accordingly, it felt bound to oppose any inspection of such a nature by an external

authority. Moreover, it was felt that the view taken by the Ministry on this question had a bearing on the measure of real responsibility that was being entrusted to the University. In so far as it was the purpose of inspection to afford academic guidance to the lecturers in training colleges the responsibility for such guidance ought to rest with the University and not with the Ministry. The University, however, made it clear throughout the discussions that it regarded the co-operation and assistance of the Ministry and its staff as essential for the success of the scheme. Happily, complete agreement has been reached on these issues and it is anticipated that the final formulation of the London scheme will now proceed apace.

AMERICAN EXPANSION

Many people in Britain thought that the number of students in the universities in the United States before the war was so large that standards must necessarily be low. That the Americans do not share this view is proved by the fact that, whereas there were 100,000 university students in the State of New York before the war, there are to-day 235,000, and it is expected that this number will not fall below 200,000; nor does there appear to be any lack of demand for them.

An American industrialist who is now in this country and who is responsible for engaging university graduates for his firm informs us that he has recently been to Columbia University, New York, for this purpose. During a week at the end of the session forty-eight rooms were set aside by the university for the use of industrialists wishing to interview students, and for the whole of the week these rooms were fully occupied by representatives of a large number of leading firms in the country.

In contrast with America, the number of students in the whole of the universities of Great Britain before the war was 50,000. The Barlow Report recommended an increase to 100,000 in ten years; it is now understood that the target has been fixed at 88,000 as the highest number that can be achieved without lowering standards. And when will British industrialists clamour for students from our universities as they are now clamouring in America? The article by Sir Charles Tennyson on page 56 discusses the value of the arts

graduate to industry. His views are not, however, as yet, nearly widely enough shared.

STATISTICS OF SCIENTISTS

Just at the time when this issue appears some 200,000 graduate scientists and engineers in this country will receive a questionnaire from the Ministry of Labour asking for details of their present employment and of their academic qualifications and subsequent experience. The purpose of the questionnaire is to ascertain more accurately than was possible at the time of the Barlow Report how the existing manpower of the country is distributed in the scientific and technological fields. Since investigations are proceeding at the same time into the demand for different kinds of scientists, it should thus be possible to calculate the discrepancy between demand and supply and so enable the universities and technical colleges to plan the appropriate expansion of their scientific departments.

The questionnaire is thus an essential element in immediate university developments, but it can also yield further benefits. The information is confidential and the results must be impersonal, but the statistics which can be evolved from them can provide invaluable information about careers. What proportion of science graduates remain in scientific work? How many turn to managerial work? What are the average salaries at 25, 30, 40 or 50? How many become independent consultants? How does the career of the third-class graduate compare with that of the first-class? How many are doing research? These and other such answers could tell the universities a great deal about how well the individuals they train and the world they subsequently enter are suited to each other. It is to be hoped that the Ministry of Labour will do these calculations and publish the results.

EX-SERVICE STUDENTS

As part of the arrangements for the re-settlement of ex-service men and women, ninety per cent of the places in the universities were reserved for them. An answer given to a Parliamentary question just before the August recess shows that only some forty per cent of students last session had come out of the services. The figures are as follows :—

Numbers of full-time university students with homes in the United Kingdom.

	Men	Women	Total
Ex-service	22,356	1,879	24,235
Direct from School	21,593	14,326	35,919
	43,949	16,205	60,154

The priority granted to ex-service students has not been in operation long enough for its full effects to be seen. The small proportion of ex-service women to other women is no doubt largely due to the fact that many women, such as teachers in training, were allowed to complete their university studies during the war. Many men students, too, particularly in science, were allowed to graduate in shortened courses before being called to the services or industry.

There are many ex-service men who, in spite of Further Education Scheme grants, feel unable to devote the necessary years to a university course in view of their age and, in some cases, their family responsibilities. Some of these men have accepted opportunities for less prolonged training, for example, in the one-year emergency training, college. Still other men have not had sufficiently good qualifications, after years of absence from study, to profit from university courses and have failed to gain entry. It is to be feared that peace-time national service too will induce this academic rustiness unless provision can be made for ex-schoolboys to keep up knowledge and skill which deteriorates unless constantly used. It has been noticeable that a relatively high proportion of ex-service students have entered ordinary degree courses rather than honours schools.

THE NUFFIELD FOUNDATION

It has for over a generation been the habit of many American millionaires to leave their money to Foundations established for the benefit of universities. The largest and best known are the Rockefeller and Carnegie, but there are literally hundreds of others. The trustees, at least of the larger Foundations, have in general shown

judgment and imagination in spending their funds; they have concentrated on helping forward the best work in the universities and have undoubtedly played a leading part in helping them to raise their standards. While the bulk of their money has been spent in the United States, some of the Foundations, notably the Rockefeller, have made important gifts in this and other countries. Indeed, the position was somewhat humiliating in the inter-war years. Great Britain was a rich country and yet if any university wanted an important new development it almost automatically turned to Rockefeller for help.

It is encouraging that at least one British millionaire has given money on a large scale to a similar Foundation. The second annual report of the Nuffield Foundation has recently appeared. The universities have not been the only recipients of grant; even so, the amount they have received has been substantial and they have been given important help and stimulus in various directions—particularly in the encouragement of research and in the establishment and development of departments in the medical and science faculties. A beginning has been made in the assistance of departments of social science, broadly on lines advocated by the Clapham Committee, and there is evidence that the Foundation hopes to extend its activities in this important field. The distribution by the trustees has been made with the same wisdom and care as in the case of the best American Foundations.

Other millionaires please copy.

CAMBRIDGE ENTRANCE REQUIREMENTS

The University of Cambridge is debating whether the requirement of a classical language from entrants in science should be dropped. Fears are expressed about the effects of this proposal on the general education of scientists. The aim of ensuring that "no one enters the university who has not received a sufficiently general education" is one with which we sympathize, but the retention of the present requirements seems to us an ineffective means to this end. Instead of embarking on an orgy of out-dated controversy the Senate might more usefully concentrate on considering what a general education to the age of entry should have achieved, and should discuss with the schools the framing of entrance and scholarship requirements which would help them to work to that end.

THE TUTORIAL SYSTEM

INTRODUCTION

Not only are developments in bricks and mortar taking place in the universities, but also many changes in methods of teaching. The following group of four articles is intended as a contribution towards a discussion of the Tutorial System. This system, which has gained immense prestige at the heavily endowed older universities, is looked upon with envy by many in the younger ones. Is it a system to be slavishly copied ? Are the previous deterents to it in the shape of finance and staff now melting away ? What are the advantages and disadvantages of it for students and staff ? What other systems of tuition in small groups exist ? Are there adaptations of the tutorial system which are specially suitable for the provincial universities ? These and other questions are raised in the following pages. No attempt is made to reach a final conclusion.

The purest doctrine of the tutorial system is to be found at Oxford and Mr. McCallum discusses and criticises it from the point of view of the Oxford man. A very similar system is in operation at Cambridge under the name of " supervision." Mr. Ratcliffe is a scientist, and in his article he raises the special problems of the teaching of science undergraduates. It is particularly interesting that he considers that in Cambridge the supervision system is not felt to lay too heavy a burden upon the staff, whereas from Mr. McCallum's article, this appears to be a bone of contention in Oxford. London University is so vast and its parts so separate that generalisations of the whole are impossible ; Mr. MacRae describes his experience at the London School of Economics and stresses the value of the class system. Finally, Mr. Templeman who has particular experience of joint honours degrees in Birmingham discusses the adaptation of the tutorial system from the point of view of the provincial universities.

The problem is two-sided ; first under what conditions is the system in itself desirable, and secondly whether, if it is desirable, it is also practicable ? There are those who hold that the most elaborate form of the tutorial system is often a waste of time both for the student and the don, especially during the first year. In such cases, small classes which retain the intimacy of the tutorial without its embarrassments, seem to be one solution, and Mr. Templeman and Mr. McCrae

describe a number of variations. On the side of practicability, the question of expense is now less serious for the provincial universities than before the war owing to the very large increase in government grants. Staffing difficulties are more serious, but even before the war the staffing ratios at the English provincial universities were already about one to nine. This position is not nearly so bad as most teachers at the provincial universities would have us think, and it should improve greatly in the future. At present the grave shortage of staff is due both to the drying up of numbers at the universities during the war, and to the large increase in student numbers subsequently. Nevertheless it is clear that neither expense nor shortage of staff can for long be used as arguments against the tutorial system if it is considered desirable for other reasons.

The provincial universities have, however, special problems of their own, in particular because the time at the disposal of the students and staff is more limited when both staff and students may live an hour's journey from the university. Most tutorials must take place between ten and five, and there is not the leisured feeling which is possible in a college in the long period between tea and Hall. Accommodation too is a problem. Birmingham University is fortunate in having been able recently to provide every member of the staff with a separate room, but this is not the case everywhere and the quiet and intimacy which is so essential to good individual teaching is impossible in a room shared by two or three other dons.

In reading these four articles some may gain an impression that the volume of individual teaching in London and the provincial universities is much larger than it really is. The authors of the articles have naturally been selected for their interest in the subject, and their experience is not representative of the average—particularly the average outside Oxford and Cambridge. In actual fact a large proportion of students—particularly those who are not taking honours courses—have the scantiest individual attention. Nevertheless they already fare a great deal better than students at most European universities ; for example, in 1939 the ratio of staff to students was only one to forty in France, and the position has deteriorated since.

We hope that these articles will provide food for thought to those who are now working out the new lines on which teaching in the universities will develop, and will stimulate further discussion.

THE TUTORIAL SYSTEM AT OXFORD

By R. B. McCallum

University lecturer in Politics and Fellow and Tutor of Pembroke College University of Oxford. Formerly research fellow of Princeton, U.S.A. and lecturer in History at the University of Glasgow.

It would be a matter of much research to establish exactly how the tutorial system at Oxford arose; the practices varied between colleges, faculties and individual fellows, but it is now fairly well defined. It means that a student shall have one hour's instruction a week and this usually takes the form of reading an essay and a discussion on the subject of that essay. When we speak of an hour a week, it should be remembered that often pupils are taken in couples, especially at present when numbers are unusually large. In addition there are seminars, more often referred to as "informal instruction," which take the form of classes and are more commonly applied to the more specialised branches of the curriculum and made available to students towards the end of their career. We are speaking here only of teaching for the honour schools for the degree of B.A. Teaching for the advanced degrees is another matter.

The merits of the tutorial system are frequently extolled and the burden it places on the tutors frequently deplored. Some of the present ex-service students have expressed a desire for more instruction of the seminar type, but it does not appear from their utterances that they regard this as anything but a supplement to their tutorial instruction, for which they are more avid than any previous generation of students and which they attended with a military punctuality. Every Oxford student expects, requires and demands that each week he shall have what it is quite impossible to prevent him referring to as his "tute." For this there is a good reason. He pays for it: at present the tuition fee is £15 per term, paid for by the student or by some beneficent organisation which is financing him. These fees however are not paid directly to the tutor and they do not cover the whole cost. In addition tutors receive a fellowship stipend which is paid out of the corporate revenue; that is the income received from the endowments of the college. If the teaching body of Oxford, other than professors, were to be paid entirely out of tuition fees

then there would either be fewer tutors or their salaries would be much lower than at present. From this it appears that the tutorial system is expensive; any institution which desired to emulate it would have to exact an annual tuition fee of £45 from each student and in addition have some source of revenue from endowment or government grant with which to supplement the salaries of the tutors employed. The question is, what is the value of this prodigal method of education?

Value to the student

The value at first sight is obvious. Each student is continually in touch with a tutor who sets him his work, observes his progress, estimates his capacities, corrects his faults and finally advises him and assists him in the choice of a career. It is difficult to see how by any more wholesale method of instruction, such as classes, there can be such careful instruction and such continuous survey and correction. Yet this means of instruction is under continuous criticism from Oxford tutors themselves, and from many observers from outside. In the first place we may inquire what disadvantages it has from the point of view of the student? There is one serious disadvantage, and that is that the value of the system depends on the merits of the individual tutor. One man may sit at the feet of the brilliant and assiduous Mr. Megson of St. Mary's and all his life will testify to the advantages of such intellectual intercourse. Another may be destined exclusively to the idle and inefficient Mr. Gregson of St. Jude's and will never cease to proclaim that, if only he had had his interest awakened and his work governed by a really good tutor, his career would have been different from what it actually has been. This is a very serious disadvantage. On the whole Oxford colleges take great care in choosing their fellows, and the standard of ability and zeal is high, but there may always be exceptions and very unfortunate effects may result. Yet it should be remembered that nowadays with increasing specialisation it is unusual for a student to remain all his time under the same tutor. The danger of the one bad tutor is thus real, but it is tending to diminish.

From the student's point of view there is said to be one other disadvantage in the tutorial system and that is the danger of being "spoon fed." It should be stated plainly that this is a disadvantage

of which the students themselves are scarcely conscious. The criticisms come from the tutors and for them it is so comfortable a doctrine that it must be viewed with some suspicion. The student is unlikely to feel the danger of being spoon-fed, for either he is a man of some critical faculty and intellectual independence, in which case he can assert himself against slavish methods of instruction, or else he is a weaker vessel who has real need of firm and careful guidance. Looking round post-war Oxford one sees little sign that the students disdain their spoons. Never before have their mouths been so widely open. Nevertheless the system of the weekly hour and the weekly essay does seem to have the effect of discouraging students from setting out to acquire knowledge on their own initiative.

Effect on teachers

From the point of view of the teaching faculty the tutorial system is often criticised for its wearing and sterilising effect on the teachers. It is indeed one reason, although by no means the only reason, for the relatively small production of books by the large faculties of Oxford University. Sometimes it is said that the system only justifies itself for the best men, that third class men are not worth all the effort involved. This is a dangerous line of thought. Nearly every student nowadays reads for honours; if the process of selection is not perfect, none the less the students who do actually come up must be in some sense an élite. An academic man must be confident of possessing superlative capacities, if he is certain that teaching the less gifted is a waste of his precious time. Many men who turn out in the examination to be third class may have some other qualities; they may become actors, artists, novelists, poets or members of the staff of the British Broadcasting Corporation, or engage at any rate in some activity which requires gifts other than the coherent and strictly rational modes of thought that we cultivate for examinations. University education is an anteroom to life in general; we cannot be sure that our debutantes must be judged only by their proficiency in the stiff figure-dances, the cotillions and quadrilles in which we specialise. And yet they may benefit greatly by being drilled in them. If they do not do them well they may none the less profit by being given the instruction.

None the less it does remain true that Oxford tutors have to give so much time to personal instruction that their time for study is seriously diminished. There are two problems here. The first is the number of hours. A man teaching twenty hours a week or more can do little study during term, and it must be remembered that he has probably administrative, examining and other duties as well. But in addition to the number of hours there is also the number of subjects a man may have to teach. This varies from college to college and faculty to faculty but the tutorial system makes the Oxford don under the obligation to be extremely versatile ; another way of putting it would be a gifted charlatan. However much we try to cut down the number of subjects we handle, it is still too much, more especially for tutors in the smaller colleges which cannot have many tutors in one faculty. And faculties, animated by a restless zeal for improvement, are constantly altering curricula, abolishing established subjects and inventing new. The pace remains hot. As a generalisation it may be said that the Oxford tutor spends too much of his time doing too many things.

If a tutor can be relieved of some of his work, whether in the number of hours or the number of subjects which he must teach, the question arises, what will he do with the time and energy saved. The purpose, although not necessarily the effect, of such a saving is always described as " research." A broader and more useful term might be study. Research proper may be conceived as meaning study of some particular problem or period with a view to publication, or, to put it more concretely, work that has to be done in a library with a loose-leaf note-book if not actually a card index. Now it may be safely asserted that nearly all academic men should sooner or later write for publication and write such work as makes an addition to the knowledge of their subject. Yet to lay it down that dons should devote all the time they can spare for research in the narrower sense would be a very false doctrine. There is such a thing as general reading. And the tutorial system requires that a tutor should read widely among the numerous good books he presses on the attention of his pupils. The wider the field of a tutor's teaching the greater the need of such general reading, and the less the time for " research." It might almost be said that in certain circumstances a good college tutor has no business to waste his time in research.

Such are the disadvantages of the college tutorial system when weighed against the claims of pure learning. There is a plain conflict of interest. Nor is it only a matter of time and hours. There is also the question of mental energy and concentration. A tutor who gives himself with zeal and enthusiasm to his teaching will perhaps lack the energy, psychic and physical, to devote what hours remain to him to research. His powers are spent. One may hear of the celebrated Dr. A. justly famous for his excellent books who tutors lackadaisically with one eye on the clock and is disliked by his pupils, who will speak with warm gratitude of the obscure Mr. B. who has illumined their minds, directed their studies and later on assisted them in their careers. *Non omnia possumus omnes.*

The tutorial system gives the pupils a degree of personal instruction that is scarcely known in other universities; faults can be corrected and qualities and talents nursed. Moreover the tutor attains to a knowledge of his pupil personally that a system of class instruction is unlikely to permit. When the student leaves to take up his career he can be spoken of with a degree of understanding and confidence that must command respect, provided the tutor has not acquired a reputation for turning all his geese into swans. In Oxford there is no question about the maintenance of the tutorial system. It may be slightly altered, mitigated or intensified. It is inconceivable that it should be abandoned, for our whole finances depend on it and the students will not accept much less for their money. How far it should be imitated elsewhere I leave to the other contributors to this discussion.

SUPERVISION AT CAMBRIDGE

With Special Reference to Natural Sciences

By J. A. Ratcliffe

Reader in Physics in the University of Cambridge; Fellow and Director of Studies in Natural Sciences, Sidney Sussex College.

The work of the Cambridge undergraduate is organised to some extent by three different people. His Tutor ([1]) discusses with him what subject he should read; his Director of Studies suggests which lectures should be attended and arranges for the weekly Supervision ([2]); his Supervisor, who may be the Director of Studies himself or a Fellow of another college or a younger research student, conducts this supervision. Whoever the supervisor may be the undergraduate soon finds that he is the teacher with whom he comes most into personal contact, and that his activities form an essential part of the Cambridge system of teaching.

The amount of supervision varies with the subject, the ability of the student, and the extent of his previous knowledge. In a course such as that for the Natural Sciences Tripos, where Part I embraces a wide field covering three or more separate subjects, supervision may be attended in different subjects in different terms. The freshman may be supervised in a subject which he has not studied at school; later he may attend, instead, supervision in his other subjects; and in the term before his examinations he may have no supervision at all. The arrangements are made, to suit individual cases, by discussion between the student and the Director of Studies and vary considerably from college to college.

Methods of supervision

There is as much variety in the nature of supervision as in the method of its arrangement. An arts student may, after reading his essay aloud, engage with his supervisor in a general discussion of an economic or political topic; whereas a group of three or four science undergraduates may together take notes on a " potted " lecture given

[1] In Cambridge " Tutor " means an administrative College Officer who stands *in loco parentis*, but has no direct responsibility for teaching.

[2] The Supervision is the equivalent of the Tutorial at Oxford.

by the supervisor with the aid of a blackboard. The differences in the technique of supervision are determined, to a considerable extent, by the nature of the subjects. In those branches of learning often spoken of as " cultural " the subject-matter is not far removed from everyday experience and it is possible to discuss and argue intelligently in the light of facts and theories already at least partially familiar to the student. In the " vocational " subjects, typified by medicine and engineering, and to a less extent the natural sciences, an undergraduate must first acquire a large amount of factual knowledge and an understanding of an extensive and widely accepted theory before he can take part in any useful discussion or begin to have ideas of his own. Supervision in these subjects is therefore often largely restricted to the discussion of accepted facts and theories and to the explanation of simple ways of visualising and correlating them.

Part of the week's supervision is spent in going over the written work which, in an arts subject, takes the form of an essay or, in a science subject, of answers to a few questions from past examination papers. It is clear that the writing of the essay provides to the arts student most valuable practice in the marshalling of ideas and in the formation of his own opinions, as well as in the expression of them in writing. It is not so clear what benefit the science student derives from the written work, since, as we have already seen, there can seldom be two views on a scientific subject, at any rate at the level of undergraduate knowledge, and it is not likely that the student will be able to present any worth-while views of his own.

It is difficult for a scientific supervisor to encourage his students to consider those philosophical, historical, economic and literary aspects of his subject which are not of direct technical importance but which, if properly fitted into a course in science, would transform a technical training into a broad education, combining some of the advantages of the arts subjects and of the factual vocational subjects. The only possibility open to the supervisor at present is in the correction of written work, where there is an opportunity to develop in each student the ability to present his arguments in a straightforward manner, in correct English, and free from technical jargon. Other possibilities must wait till the University takes the ultimately inevitable step of humanising its science courses so that they provide a broad education

instead of having as their main objective the production of skilled technicians and technologists, all ready to fulfil the requirements of the " Barlow Report". Present difficulties do not arise from the nature of the supervision system, but from the conception of what properly constitutes a course in science in a university, as distinct from a technical college.

Value of the system to the colleges

Having described what supervision is as seen by the undergraduate, let us now view it through the eyes of the college authorities. First it should be noticed that the appropriate eyes are those of the college and not the university. A glance at the evolution of the university teaching system in recent years will help us to appreciate this point. Before 1914 the colleges, in groups, were themselves responsible for the lecturing in all except the " laboratory " subjects, and they were, in the full sense of the words contained in most of their Statutes, centres of " learning " and " research ". The college was an active teaching unit in the university as well as a hostel. After the 1914-18 war all the official lecturing was centralised under Faculties administered on a university basis, and now the colleges, as such, play no direct part in the arrangements for university teaching. If it were not that they have to provide for the supervision of their undergraduates they would have no active responsibility for teaching or learning, and there would be a grave danger that their governing bodies would degenerate into a mixture of administrators running a " hostel " and members of the university teaching staff who thought of their college simply as a pleasant and old-established club. There would result a deterioration in the intellectual alertness of the Fellows which would rapidly react on the undergraduates of the college.

Value to the staff

But if responsibility for the provision of supervision is necessary for the full life of the " college" in the abstract, what of the effect of this supervising on those who make up the senior membership of the college as individuals ? Is it not just as essential for their fullest development and education that they should be responsible for this personal form of instruction ? Supervision requires a much wider knowledge than is necessary for the giving of a course of

lectures ; the answering of the questions asked by the best pupils, and the encouraging of the weaker to ask the proper questions, bring with them a grasp of the subject which can scarcely be acquired in any other way. It is usually considered specially important that research students should undertake some supervision work ; by it they maintain a wide interest in their subject just at a time when they would otherwise be concentrating entirely on the special topic of their research, and they are helped to consolidate and assimilate the knowledge which they have so recently acquired through their own studies as students. The young research student often makes a very good supervisor, specially for the better undergraduates. His fresh approach to the subject makes up, to a large extent, for his lack of teaching experience. As he gains in experience and advances to become a college Fellow he loses this freshness of approach, but gains in breadth of knowledge of the subject. The older supervisors generally find that their supervision work is the only way in which they can keep in touch with the developments of those parts of their subject which do not form the direct matter of their research. The wise Director of Studies will try to arrange that each undergraduate is supervised by some younger and some older men.

Staffing ratios

Even if it be agreed that supervision of the type here described should be undertaken by nearly all research students and dons, for their own good as well as for the good of the undergraduates, it may nevertheless be thought that the proposition is impracticable because there are not enough supervisors to go round. Indeed from Mr. McCallum's article it would appear that there is a strong feeling that this is so in Oxford. Since there is not, to any great extent, the same feeling in Cambridge, it is of interest to consider the relative numbers of students and teachers there. In round figures there are 6,000 undergraduates, 400 readers and lecturers, and 500 research students. If we assume that 350 of the readers and lecturers and 350 of the research students are active as supervisors, that on the average each student receives supervision for one-and-a-half hours per week, and that supervision is attended by students in pairs, we find that the average supervisor must do a little more than six hours

supervision per week. These statistics agree with the facts that most dons do between six and ten hours supervision per week, and the average research student does about two. On a statistical basis, therefore, there is enough supervising effort to go round.

It is open for debate whether six to ten hours of supervision per week is too heavy a load for a don who has lecturing, research, and administrative duties in addition, but, on balance, most Cambridge dons do not seem to think so. In estimating the load we must remember that supervision is restricted to full term and therefore to less than half the year, and that it can be done at a time of day determined, to a large extent, by the supervisor himself; a popular time is between 5 and 7.30 p.m. after the other activities of the day are over. We must also remember that the lecturer at Cambridge has no written work to mark, and no seminars to conduct, so that his lecturing duties are considerably lighter than they might be elsewhere.

If the system of supervision is so beneficial both to the students and the teachers at Cambridge, and if there are enough teachers to do the work, why cannot the same system be introduced elsewhere? The answer must be sought in those two factors which distinguish Cambridge (and Oxford) from the other universities: the existence of the heavily endowed colleges, and the increasing emphasis on post-graduate study. The college endowments allow for the adequate payment of dons who are supervisors, and the emphasis on post-graduate study provides a body of research students anxious to do supervision work for their own good, for a comparatively small fee.

It is not easy to see why the Cambridge views about "supervision" do not agree with Mr. McCallum's statement of the Oxford view about " tutorials ", that " there is a plain conflict of interest between the College tutorial system and the claims of pure learning ". A possible explanation is that the greater proportion of scientific study at Cambridge brings with it a greater proportion of research workers ready to take their share of supervision work. Since it is the policy of the University to expand the post-graduate rather than the under-graduate population, it appears that there will be no difficulty in continuing the supervision system in the post-war years.

A LONDON COMPROMISE

By Donald G. MacRae

Studied History at Glasgow and read Modern Greats at Balliol, taught in Army Education and worked for a short time at the Oxford Institute of Statistics, now teaches Sociology in the London School of Economics.

The title of this section of the symposium is really fraudulent. The University of London is made up of over thirty constituent and largely independent teaching bodies, and a comparatively recent and junior member of its teaching staff cannot therefore do more than comment on what has most struck him and generalise only slightly on what happens beyond, in his case, the doors of the London School of Economics.

The School has a proud and intensively cultivated tradition of education for higher degrees but our concern here is with those of the thirteen hundred or more students engaged in first degrees. Whether these people study for the B.Sc. (Economics), the Bachelor of Commerce, or the B.A. degrees in Sociology or Anthropology, their courses are conducted by methods that compromise between those of the lectures of the Scottish universities and the tutorials of Oxford.* The Scottish system was incidentally but brilliantly defended by Professor Campbell in the last issue of the UNIVERSITIES QUARTERLY. Mr. McCallum in this issue states the convincing case for the Oxford method in its own peculiar context.

At the School although teaching is based on a firm skeleton of compulsory lectures, yet these differ in many ways from the comparable lecture framework in Scotland. Simultaneously with these lectures and increasing in number and importance as the student approaches his final examination runs a set of tutorials, seminars and classes, all owing something in inspiration to the Oxford tutorial, but differing greatly in content and method.

The young Oxford undergraduate probably suffers from the fact that he is only rarely confronted by a clear-cut and satisfactory course of introductory lectures, the very attendance at which can help him to " think himself into " his subject. The Scot on the other hand

* Degrees in other subjects are taken partly at the School, partly elsewhere.

finds a compulsory lecture syllabus of some three courses of four lectures each per week continuing throughout the session. In most subjects these will be given, if it is a first year course, by the appropriate professor. In London the student encounters a large syllabus of theoretically compulsory lectures given, if they are introductory, as often by the most junior as by the most senior members of the staff. He may have to attend ten lectures each week : *it is likely that these ten lectures will be on as many subjects, and that the courses to which they belong will be only terminal,* so that the following term new themes may replace the old.

Now the Oxford undergraduate may regret the lack of a more coherent lecture course, but his tutorials are probably much more than a substitute. The Scots student may be unhappy about his lack of personal contact with the staff — though his long, terminal essays to some degree compensate for this, and his lecture courses can traverse their subject thoroughly and at leisure. But the student at the School has a more difficult task : to hold together the tenuous threads of so many, so brief and such various discourses is an enormous and inevitably confusing enterprise. The first year student, fresh from school or the forces, inevitably asks for more explanatory classes or turns to his First Year Adviser for help.

The First Year Adviser

The task of the First Year Adviser is regularly to make personal contact with the members of a group of students allocated to him, to encourage their literacy and their humane interests by setting them essays, to advise them on their conduct and the procedures of the academic maze. In fact, more and more as the session continues, the adviser is driven to the elucidation of obscure points carried garbled from the lecture-room, and worst of all, to advise on "examination technique." The First Year Adviser thus becomes a tutor in something of the Oxford sense despite himself, a tutor bound to a lecture system with which he is not necessarily connected.

This complex of lectures is supplemented by tutorials, and classes or seminars. (In practice the difference between the latter pair is very blurred so far as students for first degrees are concerned). Tutorials for essays, more especially with finalists, closely resemble

the Oxford pattern, though they are far less frequent—no exact estimate of their number is possible as between faculties. The essays brought are short by Scottish standards, but, unlike those of Oxford, are selected from an arbitrary list of subjects, and follow no temporal order dictated by logic or the individual student's need. All students benefit from these, and if the good benefit the more, the weak gain more essentially. I think that most teachers would, if it were possible, welcome more frequent essays from all finalists.

Value of classes

It is in the multiplicity and diversity of its apparatus of classes that a body such as the School of Economics most differs from other institutions of higher education, and, despite the doubts and criticisms I shall express, it is from this experiment with classes that I think something valuable may emerge as a modification of the tutorial system, less costly in labour and as valuable in result. This hope, unfortunately, is as yet not fully realised.

In a true tutorial with one or two students bringing essays as part of a repeated routine, the tutor can adapt himself to the needs, limitations and powers of his students. In a class of three to twenty students this becomes almost impossible. (I say " almost," because even a large class may have a quite positive character of its own, and when, as frequently happened in the forces, the group is dominated by some over-mastering enthusiasm or curiosity, this character can be treated with as much uniformity as can an individual). The usual procedure of a class is that all its members have in theory acquired an appropriate background for the subject to be discussed and that either (most usually) one member of the class reads a short paper on the theme, or the teacher himself gives a short introduction to the subject under discussion.

The first procedure usually suffers from a too long part of the class time being occupied by an often badly-read paper and from the fact that, inevitably, the other members of the class have frequently neglected to read up on the subject. The second method may aggravate the latter difficulty, and leave the teacher under the necessity of transforming what should have been, like a tutorial, a co-operative effort into a lecture surrogate.

The solution here is surely a close association of classes to the progress of the lecture syllabus, and a keeping of the size of the class small enough for each individual to be a clear and responsible member. (A large class may, by chance, permit of this, but I think that opinion is almost uniformly in favour of the class ranging from only five to seven members). Even so I do not see how one can expect adequate papers for discussion from any first or all second year students, and the teacher must therefore be prepared to work at least as hard for and on a class and with more concentration than with a lecture. And, if this is true, then the class is not a complete substitute for the Oxford tutorial essay or the Scots long terminal paper.

Organisation of classes

The adaptation of a competent tutor to his student is almost automatic, but as was remarked above, this can rarely be the case with a class. It is extremely easy in a class of mixed abilities to ignore the stupid or the reticent, and, of course, the reticent are not necessarily stupid — often very much the contrary! — while arrogance and ignorance too frequently combine in one most prominent member of the group and waste much time. Again, too, with the social sciences especially, the religious or political dogmatist may present a real problem as how best to further the education of individuals while adequately expressing and explaining scepticism or dissent.

A class is a public, not a private occasion. It is therefore essential that temperament and ability should be ordered to a certain uniformity. The shy are less so in the company of the equally shy, and bring up more readily those difficulties and misunderstandings which a class or a tutorial alone can solve, but which they might never dare to produce in the presence of other students of whom they are in awe. The brilliant best sharpen their wits against each other, while the ebullient extraverts do least harm in the company of those most like them.

To counsel such uniformity is to counsel perfection and is probably undesirable, but to conduct classes with profit the teacher does best when he has a large enough number of students at the same stage to allow of some reshuffling on a basis of personal estimation. It might seem that a grading of students for class work could be carried out on a preliminary foundation of intelligence testing or examination results,

but though the I.Q. may be a measure of specific intelligence, I suspect its correlation with educability, while examination results are often the most unreliable guide to the present character of the rapidly altering and maturing student.

Now at the School of Economics conditions cannot always allow of these conditions of perfection. The complicated counterpoint of our lecture system results in there being far too many classes to accompany the lectures. The absence of an established and uniform essay system results in these classes in both the Intermediate and the first of the two Final years being used for the writing of papers which might be better postponed until a wider background has been gained by the student. There has to be practice in literacy but I think that it is now too often gained at the expense of the time for classes.

Yet the compromise system of lectures and classes in London seems in principle largely correct and the seminars and classes of our finalists stimulating and valuable. The class allows, as no tutorial can, the display of a wide range of opinions and problems and yet provides that individual and continued contact with a range of teachers which Oxford and Cambridge rightly prize. With experiment and simplification of time-tables—which perhaps could only be gained by a third and, alas, at present impossible, finals year—the class system seems to me to present a real solution to the problem of university teaching in, at the least, the social studies. If the sharp break at the Intermediate Examination could be avoided I feel certain that this London compromise would show to much greater advantage.

Whether it can in any way be used to lower the staff-student ratio* I do not know, but I should think that obviously, if this is necessary, it could do so. That, so long as evening students utilise the same staff as is employed in daytime, it can increase the free time for research and study of the teaching staffs in London I very much doubt, for, as was said, a class inevitably involves the teacher in almost as much effort as the preparation of a formal lecture. In my limited experience it is also much more satisfying.

* At any rate, I believe, as high at the School of Economics as in Oxford or Cambridge.

THE MODERN UNIVERSITIES

By Geoffrey Templeman

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Teaching methods vary from one modern university to another, from one faculty to another, even from one department to another, but these variations do not constitute absolute differences.* They are minor alterations of a common pattern made to suit particular circumstances, yet the pattern itself remains everywhere visible. It is provided by the framework of formal lectures to which all other teaching devices are subordinate and supplementary.

Most students find, particularly in the first and second years, that reasonably good lectures are a great help both as a means of achieving a quick and firm grasp of the essentials of their subject, and as a guide to profitable reading in it. Bad lectures, which are not as rare as they might be, are a tragedy for many students. They sow a crop of misapprehensions and frustrations which it is hard to root out afterwards by less formal teaching methods. It is perhaps worth noting that the most frequent and most damaging criticism of the lecture system is the same as that levelled by Mr. McCallum against the Oxford tutorial system. It can and often does lead to the " spoon-feeding " of students. Then lectures are taken down more or less verbatim, laboriously committed to memory and carefully reproduced in examinations. Yet this is not so much due to inherent defects in the system itself as to failure on the part of those who work it. The good lecturer, like the good tutor, will see to it that his students cannot learn what he has to say by rote and rest content with that.

Methods in modern universities

After his lectures the student in science or medicine must undergo the regular discipline of laboratory work. For the arts student lectures also have their academic consequences, although necessarily of a different sort. There are prose and conversation classes besides essay groups or tutorials as they are variously called. Before considering these arrangement and devices in more detail it is perhaps

* My own experience has been mainly confined to the University of Birmingham and and in particular to its Faculty of Arts. Much of what I have to say is coloured, some may think distorted, by this experience.

well to recognise that of recent years considerable efforts have been made in most of the modern universities to achieve more effective supervision of the individual student's work and progress. Often such efforts have been, and for that matter are still being made in the face of most discouraging conditions. Apart from shortage of staff, lack of private rooms and of other ordinary though necessary things has been a constant stumbling block in many places. At Birmingham it has been possible this year for the first time to provide every regular teaching member of the arts faculty with a private room,* but the situation is worse in other places. It is more than a little difficult to see how any worthwhile personal supervision of students, whatever form it takes, can reasonably be expected without such ordinary facilities. This consideration is reinforced by the fact that in the large industrial towns many teachers must live long distances from the university, and although some try to receive students regularly in their homes, it is not generally possible to do so. Thus what individual contact they have with those they teach must be made in the university buildings where office hours must needs be kept.

The Science departments have mainly sought to achieve closer individual supervision of their students through the careful organisation of laboratory work. Lecturers, sometimes with the help of research students, not only arrange and control the daily programme of experiments but also make it their regular business to discuss with each student the problems he faces and the progress he makes. If this does not take place everywhere nevertheless it is sufficiently common to be regarded as a characteristic feature of science teaching in the modern universities. It would be impertinent for one who is not a scientist to judge whether such methods give the student that grasp of the more fundamental philosophical conceptions underlying his subject for which Mr. Ratcliffe asks. Yet, as he himself suggests, blame for failure to do this rests principally on those responsible for framing the course of study rather than on any tutorial system as such.

In Arts the tutorial situation is at once different and more complicated. For one thing the arts man lacks the regular discipline

* In at least one leading provincial university there are many cases of four staff sharing a room.

of many hours laboratory work each week, and the opportunities that it can give for useful contact with members of the teaching staff. He must get his personal supervision in shorter periods and more concentrated form. During his first and second years, when large lecture classes are the rule, he will find that in some courses his weekly lectures are supplemented by a tutorial or essay group. Ordinarily such additional classes are small in size. At Birmingham, where it is the practice to provide these classes for all arts students, three to four students in each is the aim, although nowadays a total of seven or eight is not uncommon. Members of the group read short essays in rotation week by week. Afterwards it is the business of the tutor to stimulate discussion, to see that problems are recognised and faced, and, where necessary, to comment more fully than is possible in lectures on particular points. In addition there are prose and conversation classes in language departments and seminars on set texts are common in History, English and Philosophy. In the final year in all departments and throughout the three years in many smaller departments a rather different situation generally prevails. Numbers in lectures are reduced and these can therefore be made much less formal with opportunities for questions and discussion. Moreover in some cases, especially where a dissertation or similar exercise is demanded as part of the final examination, it is possible to achieve genuinely personal tuition.

So far it is clear that the provincial student can be much less certain of the tutorial help he is likely to receive than his counterpart at either of the older universities. He cannot expect that all his work will regularly be guided by a tutor, who may well exercise a profound influence on his academic career. At the very worst the provincial undergraduate may find himself involved with a department which regards students as mannerless intruders on the even tenor of a quiet life, and here he can hope for nothing but a bare ration of lectures. In some universities if he is a pass student his lot will not be much better. He will get what scraps of tutorial help remain after the needs of honours people have been met. Usually however for the honours man, and in some places for all students personal help and supervision is forthcoming in a variety of ways. Unless he is taking one of the less popular subjects the student cannot ordinarily hope for much

individual attention until his final year. Before that he must take his part in a group, where, if he is enterprising, he will sharpen his wits in discussion and profit by the mistakes of others as well as his own. None the less he will often be pleasantly surprised to find how much trouble, in the form of special individual work, many teachers take with weaker brethren and with promising students too, who, incidentally, are far less numerous than they ought to be by reason of iniquitous scholarship arrangements.

Defects of the existing system

There are two particular defects in this system, if it can be so called. First is its uncertainty, because not only its efficiency but its very existence depends so much upon the energy and enterprise of individual departments. Second the system has on the whole a cramping and narrowing influence on studies. Supervision tends to be concentrated almost exclusively on the matter of particular courses. As a result all but the best students acquire the habit of regarding their subject as a series of disconnected bits. Knowledge and ideas gathered from each course are carefully put by themselves in separate categories, and pathetically little effort is made by many to achieve a synoptic view of their subject. This is serious enough in the case of those who specialise in one branch of knowledge, it is calamitous in the case of students for a general degree, whose studies range over a number of normally separate subjects. Here is one of the chief reasons why none of the modern universities has succeeded in establishing a satisfactory general honours course in arts. It is easy enough to prescribe attractive combinations of subjects; the difficult part is to achieve real co-ordination among them for the student's benefit.

Remedies

Remedies are less obvious than the defects. Every faculty might well enforce some minimum provision of tutorial help like that just described in all its departments so that every student, pass and honours, can benefit. There is now less excuse for neglecting to do this on the score of expense, particularly in additional staff, than there ever was. It is by no means so easy to curb the student's regrettable habit of vivisecting his subject. Lectures and tutorials deliberately

seeking to show the wider implications of particular themes might help, as might careful programmes of vacation reading.* We might even experiment with the device of assigning groups of students, particularly in their final year, to members of staff who would act as Directors of Studies. Their job would not be to supervise the details of student's work, but to endeavour to see that they grasped their subject whole. And who knows, in these days when we all become more specialised and less willing to stir from our own small plots, but that teachers themselves might benefit most from such an arrangement ? Perhaps it is not too much to hope that one day, if such folk ever become available, arts faculties might appoint men with good general degrees to some lectureships.

Teachers' difficulties

For those who teach in modern universities, especially in arts subjects, the situation sketched above has its own peculiar difficulties. Most teachers must take their share of regular lecturing, to which as much as half their teaching hours may be devoted. Behind this lies the time, often considerable, which must be spent in preparation. Then there is private research, always necessary for intellectual health, nowadays also urgent for the less worthy reason that articles and monographs are supposed to attest the university teacher's competence. Where then is he to find leisure for that wide general reading, which Mr. McCallum so rightly stresses as a necessity for the good tutor ? The fact is of course that he often doesn't find such leisure, nor is he likely to while appointing committees continue to set particular store by publication to the detriment of anything else.

Up to now discussion has been limited to tutorial problems arising from the details of the curriculum, but some other points remain to be considered. Most students need help in choosing both their course and their career. Some do not find it easy to settle down in a new environment, for even a modern university has its temptations to idleness. Home circumstances can be very difficult, financial troubles are not yet abolished, and just now ex-service students have their own special problems.

* An instance of the attempts made to deal with this problem is to be seen in the Birmingham German department. Seminars are attached to each course. Tutorials proper, supplemented by vacation reading parties, are designed to explore the wider implications of different aspects of the whole subject.

Choice of courses

Some of the most serious troubles arise when students enter the university and their courses must be chosen. Of those coming straight from school some know where their interests lie and are sure of the work they want to do. Many choose their course in advance for no better reason than that they happened to do well in a particular subject in the Higher Certificate examination. More than should be the case come knowing practically nothing of what they can do, and often with entrance qualifications which prevent them from choosing the subjects they would prefer. Some faculties have recently tried to meet this situation by appointing one of their teaching members as admission tutor. This device can help, but the whole matter is one which needs much care.

Once inside the university the student who takes an honours subject will not find himself too badly placed when he needs extra academic guidance. In a small department, from the beginning, he will be known personally to the professor. In a large department, where this is not so easily possible and where no formal arrangements for moral tutors exist, he is likely to be well enough acquainted with some member of the teaching staff to get the help he needs. For women, in addition, most universities have their senior tutor, who can do valuable work in this connection. The real trouble arises among those students whose work is ordinarily divided between several departments. One example will suffice to show that this can be no small problem. At Birmingham in arts next session about 100 general honours students and 50 more taking the intermediate course, will be in the position just described. Here the need can only be met, as in some cases it is already met, by the so-called Regent System, when small groups of such students are assigned to tutors "for friendly advice and assistance".* In the Birmingham arts faculty the members of a non-professorial committee, with the active encouragement of the Faculty Board, do this work voluntarily and without remuneration.

Future developments

It remains to enquire very briefly whether the modern universities would do well to bring their teaching arrangements, particularly

* Truscot, B. "Red Brick University," p. 70.

in arts, completely into line with those prevailing in the older universities. I venture to think that some will agree with me when I suggest that this is neither possible nor desirable.

It is undesirable because, by reason of their situation, the modern universities have their own teaching problems. These are not likely to be solved by the slavish imitation of methods which work admirably in a very different setting. Also the newer universities have not been un-mindful of the individual students needs. I believe that their present tutorial arrangements, if properly developed and universally applied, are sufficiently flexible to meet all reasonable demands.

Finally such a change is impossible because it would involve expense on a scale hitherto not contemplated. I have suggested that no modern university need now be hindered by financial considerations from providing tutorial help as a supplement to lectures for all its students. It is quite another thing to argue that any modern university is now financially able to establish a tutorial system on the Oxford and Cambridge pattern. Admitting that student numbers are smaller in the modern universities, their teaching resources, particularly in arts subjects, are still insignificant beside those of the older universities. In 1939, for instance, if Cambridge and London are left out of account, there were as many teachers of history in in Oxford alone as in all other English university institutions put together*. It is probable that similar discrepancies existed in other subjects as well. If this situation has altered somewhat in favour of the modern universities recently, it has not been radically transformed and there is little possibility that it will be. For them a full-blooded tutorial system still remains, to quote Mr. McCallum, a prodigal method of education.

* Bulletin of the Institute of Historical Research. Theses Supplement No. 7. June 1939, pp. 1-9.

THE CANADIAN UNIVERSITIES

By R. C. Wallace

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The Canadian universities are passing through very abnormal times. There are in attendance over 35,000 veterans, in addition to such students direct from the schools as the available facilities can accommodate. Roughly speaking, the enrolment has been doubled because of the return of men and women to university life who have served in the forces. Numbers in the large convey little meaning, but when the figures show that approximately seven out of every thousand of the Canadian population are in attendance at a Canadian university, a clearer picture is given of the demand for higher education in Canada in these postwar years. Normally between 3.5 and 4 per thousand of our population are students at a university. Even these normal figures seem large in relation to the number of students in Britain, though they are lower than obtain in the United States. And in applied science and medicine in particular, they are definitely restricted by the facilities that are available. Many more would seek these avenues of professional education if the doors were open to them.

Students from the Forces

This influx of veterans has been made possible by the sympathetic support of the Government of Canada. In the first year of the war the government set up an advisory committee of university men, first under the Department of Labour, subsequently under the Department of Veterans Affairs, to deal with university policy in relation to the war effort. Throughout, and practically without qualification, the advice of this committee has been followed by the Government. The universities were in a position to carry on, and to develop special facilities and special training for technical and scientific needs related to the war, to devote whole departments to secret war research, to give over a very considerable percentage of the staff to government service, and, in a word, to carry on without

complete disruption. True, graduate work was almost wholly abandoned. There were neither the students nor the staff available: and the loss of these five years of graduate training is painfully evident in the staffing problems that confront us to-day.

During the war years plans were being developed for the education of the men and women who would seek the universities when they had completed their war service. It was felt that it should be made possible for them to complete their university education without drawing, except to a minimal degree, on their own resources. As it worked out, fees are paid for a period (reckoned in months of session) equivalent to the total time of service, a maintenance allowance is given which is almost adequate to provide for ordinary living expenses, whether for single or married men, and the university is given a grant on an accountable basis to meet the cost of additional teaching and laboratory needs. In this grant the construction, or reconstruction, of temporary buildings is looked after, and through another fund the cost of reconstruction of huts for the accommodation of married veterans is provided for. The assistance which the student obtains is discontinued if he fails to reach an adequate standard of attainment. To men who are already mature, and who have given hostages to fortune in wife and children, this proviso is adequate to ensure that little time is wasted, and that university life is taken seriously. Our men and women from the navy, the army and, the airforce have transformed our university student life. They have raised the level of the student publications. They have introduced the informality of discussions into the classroom. It will mean much to us if their influence will carry forward in the universities long after the last veteran leaves our halls.

University finances

In order that no misunderstanding should arise as to the financial support which the Canadian universities receive from the government, it should be pointed out that the assistance which the Government of Canada gives is given because of its responsibility to most who have served in the Canadian forces. Education as such is a responsibility of the provinces, and the federal government gives no grants to universities for the regular work which universities normally

undertake. The federal government is scrupulously careful in this matter, for the provinces are sensitive as to their prerogative. Particularly is this the case with the province of Quebec, in which the French Canadians, who comprise almost the whole population—except for the English speaking section of the City of Montreal—and who are French speaking and of the Roman Catholic faith, feel assured that complete control, in their own hands, of their educational system is vital to their continued existence as a people. They are fully safeguarded in this regard by the terms of the British North America Act. As a consequence, any support from public funds which universities in Canada receive must come from the provincial governments. In the universities of the western provinces (British Columbia, Alberta, Saskatchewan, Manitoba) which are the counterpart of the state universities of the United States, that support is practically complete, except for revenue derived from fees. The University of Toronto draws its main support from the Government of Ontario. Other universities in Canada receive varying measure of support, or in some cases none at all, from the governments of the provinces in which they are situated. But the only place where assistance comes from the federal government apart from the subsidies to or on behalf of veterans, is through the National Research Council, which gives grants for the carrying on of research in the universities, and bursaries, scholarships and fellowships to carefully selected students who will work under direction on problems in scientific research, much as the Department of Scientific and Industrial Research assists in the carrying on of research in the universities of Great Britain. This important service to the country at large reaches over the provincial boundaries, and is accepted by provincial authorities as a legitimate exercise of federal responsibility and benevolence.

The financial resources of the provinces are strictly limited, for their taxing powers are restricted. Those who are deeply concerned with the future of higher education in Canada are becoming convinced that federal support must come in increasing measure to the universities, if they are to play the part which is demanded of them in the national interest. It would be very difficult, if not actually impossible, for provincial governments to enlarge their support to

the universities in any way comparable to what is being done by the British government through the University Grants Committee. That can only come in Canada through the co-operation of provincial and federal authorities. And there is urgent need that it should come, for our universities are greatly in need of ample support. The generous action of the federal government in assisting veteran students may be taken as an omen for the future. Already, on the basis of a 50-50 contribution with the provinces, money is provided from Ottawa to help able and needy students to obtain a university education.

Two cultures

Canada is fortunate in that it has two cultures—the Anglo-Saxon and the French. It would be still happier if full use had been made of the opportunities which these two cultures offer in the enriching of national life. The double barrier of language and religion has been too strong, and there has been but little interpenetration and interfusion of the values which are inherent in the two attitudes to life which these cultures represent. The Anglo-Saxon is realistic and practical, as befits a pioneering people concerned with the taming of nature to the needs of man in a country of great spaces and much latent wealth; the French has a Latin clarity, combined with a sense of language and dialectic to which the Anglo-Saxon culture in Canada does not aspire. Up to the present time the scientific and industrial progress of Canada has been disproportionately in the hands of the English speaking Canadian, who represents in population two-thirds of the whole. He has a flair for the application of science to practical problems which is very clearly noticeable in his choice of courses in the university and in his achievements in the practice of his profession. The predominately linguistic and philosophic emphasis in the French Canadian scheme of education has left much less place for the sciences, and the young graduate from the University of Montreal or from Laval University has hitherto found himself somewhat handicapped in taking his rightful place in the industrial development of the province of Quebec. But a shift in emphasis is very noticeably taking place to-day. Quebec is rapidly being industrialized. The development in power, in mining, in pulp and paper manufacture, in the chemical and metallurgical

fields are significant, and demand well trained men in the sciences and their application. Laval University and the University of Montreal are building up very able departments in science, and French Canadian scientists are holding their place without apology in the rapid advance of all the sciences in Canada. It is significant that one of the most outstanding representatives of the Roman Catholic Church in Canada, the Archbishop of Ottawa, is a French Canadian scientist of high prestige as a chemist. The old order is changing.

But there will still remain, in the French Canadian scheme of things, a quality which has a special value for Canadian education, and which has hitherto not been fully recognized in the English speaking communities. The regime in the classical colleges of Quebec, which lay the groundwork for the professional courses in the universities, is classical and philosophical. The product, at its best is distinguished by a fine sense of language and a delicacy in its expression, and by a deep appreciation of inner values. Even to the Quebec habitant, farming is not so much a profession or an industry as it is a way of life. It is for the universities of Canada as a whole to bridge the gap—for which religious differences are in the main responsible—which prevents the interplay of educational ideals in Canada. There are promising indications that the universities will not fail in this responsibility.

In the English speaking universities there is refreshing variety. Their origins are different, and their responsibility to their constituencies is somewhat closely defined by geographical and industrial conditions. It is natural, and fitting, that the universities of the western provinces, which have grown up within the last fifty years almost under the wing of the great state universities of the American Middle West, should be financed almost entirely by provincial funds, and should give very particular attention to agriculture and to a wide-spread extension service that reaches out practically to every adult in the province.

Adult education

The students within the university are only a part of the constituency of these universities. Adult education is another, and no less

important, function. Every university in its own way carries on the work of extension. The Workers' Educational Association does not play so large a part as in England, but in art and drama and music, in industrial relations and in local government, in international education and in literature and economics, every Canadian university finds some means of expression, suited to its own individuality and its own resources, whereby it fulfils a duty to those who have not the opportunity to take advantage of the regular courses leading to degrees which the university may offer. But such cultural efforts are not left to the universities alone. More than one provincial government has set up, under its department of education, an adult education service, with which the universities are in close co-operation through their own extension departments. This sense of the importance of adult education is probably the most striking development in educational thinking and practice in Canada that has occurred in the last quarter of a century. The word "education" is too narrow to describe the process. There is involved not only background, but technique as well. Whatever may be a man's—or woman's—occupation in life, the desire is that opportunity be given to them to learn how to do it better. And not only that. Interests may also be cultivated, and stimulated, in order that life may be fuller and richer and more worth living. Universities deprive themselves of a great opportunity for service if they take no share in this educational movement.

Background of English-speaking universities

The older English speaking universities in Canada derive from two main sources. There are the King's Colleges or their derivatives, which take their origin from the colonial days when loyalist and Anglican sentiment expressed itself in the establishment of Church of England educational institutions. The University of New Brunswick, King's College in Dalhousie University, and the University of Toronto (King's College) are of that parentage. To meet the need of Presbyterian communities, which were not served by King's Colleges, Queen's University and Dalhousie University were established. The Methodist communities founded Mount Allison University and Victoria University, the Baptists Acadia and McMaster Universities. They were colleges, all of them, in those days. The

name "university" has come later, with the practically complete independence from religious control and the widening of openings in other than arts courses. McGill University had no direct religious affiliation. It developed as a completely independent institution. So too did the University of Western Ontario, at a much later date.

Something of these distinctive backgrounds remains. At Queen's, following the Scottish tradition, philosophy is a compulsory subject for an arts student, whether in honour or in pass courses. Acadia and MacMaster accept no provincial aid, for the Baptist tradition has been to have no commitments with the State. Bishop's University, surrounded as it is in Eastern Quebec by French Canadian settlement, maintains its place by being definitely and outspokenly English. The classics have a firmer hold in Dalhousie than they have in the western universities, where culture is newer and as yet in the making.

Threat to the humanities

The differences are refreshing, for they make for individuality. But when university men in Canada meet in conference, the common problems bulk much more largely than do the differences in interpretation. They are not Canadian problems only, though they take colour from the Canadian atmosphere. They have to do, in broad terms, with the interpretation of a liberal education to a practically minded people in a country where the material resources necessarily occupy the time and energy and skill of a very large part of the population. For the sciences and the technical subjects there is, relatively speaking, good support. The need for well trained scientists, technicians and engineers is self evident. They show their value in mastering a country that requires their skilled hands at the reins. Without them the war effort would have been greatly impeded. Without them the reconstruction towards peace will not be possible. It is not in order that there should be a slackening of scientific effort that in Canada educational leaders are concerned with the trend of things. It is rather that the values which come from the humanities and the social sciences should not receive less emphasis because of the inevitable progress of science and technology. There is some danger that our institutions of learning may become professional and technical institutions, rather than centres of humane studies, from which there may emanate an interpretation of the values which

count for worthwhile living in the social environment of our times.

Two factual surveys have been very helpful towards a better understanding of the present position of Canadian higher education in the non-scientific fields. The one was initiated by the Social Science Council of Canada, and deals with graduate study, with particular reference to the social sciences. The other was sponsored by the Humanities Council. This report gives a clear picture of the status of the humanities (classical and modern languages, philosophy, the fine arts) in the Canadian universities, and of the contributions to sound scholarship that emanate, in these fields, from the higher institutions of learning. While there is much to encourage, there is even more in these reports to cause grave disquietude. Canada has a neighbour across the fence—is there even a fence ?—a wealthy and enterprising people, liberal to their universities, constantly tempting Canadian scholars to throw in their lot with American universities. The loss to Canada that occurs year by year is a serious one, and not least in the humanities and the social sciences, for Canadian scholars in these fields have a reputation on the American side. It will be the responsibility of those who are concerned with Canadian scholarship to see to it that facilities in library and in personnel must at all costs be kept to a level such that the humane studies retain their pristine place as the directing and propelling force that vitalises all the services a modern university can perform for the needs of mankind.

Here Canada draws heavily from Great Britain. The years of war have interposed a break in the coming and going of scholars and teachers across the Atlantic. As builders of peace university men believe in the spiritual aspirations of mankind as the ultimate and only solid foundation for a lasting understanding. It is no idle compliment from a Canadian to say that Britain is the spiritual home of English speaking Canada. That was realised, with a poignancy never to be forgotten, during the dark days when Britain stood with her back to the wall. No greater service can be rendered to Canadian education in the realm of the deeper values than that the interchange of students, scholars and ideas be made as complete as may be between Canada and Great Britain. In this exchange Canada has her own contribution to make.

THE ARTS GRADUATE IN INDUSTRY

Sir Charles Tennyson

Classical Scholar, King's College, Cambridge, Secretary of Dunlop Rubber Company, Chairman of the Education Committee of the Federation of British Industries, Chairman of Council of Bedford College for Women and of the British Association for Commercial and Industrial Education.

In the term Industry I include only productive industry and not banking, insurance or commerce, and by the Arts Graduate I mean a graduate whose university training is not directed towards any specialised occupation. This excludes not only the graduate in physics, chemistry and engineering but also the mathematician who from the university goes into accounting or statistical work. In fact what I have in mind is the use in productive industry of the university man or woman who has taken a generally cultural education.

Before the war the intake of such people into productive industry was on a small scale, generally either purely accidental or confined to special entrants, such as the sons of proprietors or directors, who were sent by their fathers to the university and afterwards passed by a privileged entrance into the father's firm. The war has, of course, made a great break from the past and the new Education Act, the expected shortage of juvenile labour and the recent National Service provisions are introducing new conditions which must seriously complicate the position. On the one hand it is clear that we face a serious shortage of juvenile employees, and this should create a greater demand for the public school boy and the university graduate, whether he has graduated in science or in the arts. On the other hand there are certain tendencies which are unfavourable to the arts graduate. First of these is the democratic tendency towards promotion from within the organisation. This makes many industrialists hostile to the creation of a special class who might be regarded by other employees as privileged. There is also a tendency to attribute increasing importance to technical knowledge even for employees engaged in distribution or administration. This is not confined to the engineering industry but extends to many industries supplying functional products.

LIBRARY

Value of arts training

In spite of these tendencies, however, there is a growing realisation, particularly amongst the larger firms, that provided the arts graduate can be brought into industry on a satisfactory basis and is willing to adapt himself to the requirements of industrial employment, much advantage can be derived from his greater independence of judgment and breadth of view and the social advantages which life and study at a university, particularly a residential university, can give.

Importance is also attached to the value of the arts type of curriculum in *developing* the mind and training it in right thinking and balanced judgment. It is felt by many that the science, engineering or other specialist graduate is often too much concerned with filling his mind with facts (which he thinks may be useful to him in the future) to give due time to the culture of the mind itself and that many men, who may ultimately be required to undertake the heavy responsibilities of general manager of a large factory, would be better equipped for their final tasks if their initial education were of the university arts type.

There is evidence of this trend of opinion in the emergence during recent years of a number of courses (such as those provided by the Y.M.C.A. at Cheshunt College, the programmes at Pendley Manor and the universities' Summer Schools) offered for industrial employees who have not had the advantage of a liberal type of education. At the same time very few firms have at present any well-defined policy in this matter or any special procedure for selecting and training the arts graduate. A few large firms make a point of taking in a certain number for purely administrative work every year, but for the most part these schemes are confined to very small numbers with the intention of developing by subsequent special training a few selected candidates for the highest administrative posts in the organisation. Consequently the standard is very high. One or two companies have similar schemes designed to meet the needs of the sales organisation.

Methods of selection

Most of these firms are making considerable research into methods of selection and there is a growing tendency to use the discussion

group method, calling in the assistance of a trained psychologist. The university candidates in such cases are tested in groups with other candidates from inside and outside the organisation, and selection is rigidly based on the results of the test, irrespective of the previous history of the candidate. This practice will almost certainly grow amongst the large firms, as experience so far seems to suggest that it is an exceedingly effective method of selection. But although there is an increasing interest amongst a small minority of industrial firms, the overwhelming majority has as yet given very little thought to the problem of recruiting adult candidates, having been continuously occupied since the end of the war with the problem of absorbing their demobilised employees. This process is, of course, nearing its end and the time is therefore approaching when it will be necessary for industrialists to make some definite decision in regard to their general recruiting policy. It is difficult to forecast how this is likely to develop but something can be learned from the general attitude of industrialists in the past towards the arts graduate. Generally speaking little importance has been attached to what particular subject has been studied or to the class attained, provided that the achievement has been respectable. It is felt that the first class man may be less useful to industry than a man who has taken a second class or even a third, provided the latter has other good points in his favour, as the first class man tends to be too much of a specialist in his subject and too remote from his fellow men, moving rather too much upon the intellectual plane.

Similarly it is felt that the value of academic study is more in the power of original and logical thought which it may give, than in the actual knowledge acquired. It is for this reason that industrialists tend to discount the degree in Commerce feeling that a man who spends his time learning academically what he will absorb naturally when he comes into business, is rather wasting his time. Another factor which greatly influences employers is the difficulty of fitting a man into the industrial scheme when he begins his employment at the age of 22 or 23 with no specialist knowledge. Such a man finds himself in competition with those of his own age who have been engaged in the business for six or seven years, and, even when he has passed through the period of training, may often

feel himself at a loss when dealing with subordinates of greater industrial experience. This, combined with the dislike of creating any suggestion of a privileged class (to which I have already referred) has caused serious difficulties. It means that in order to bring the arts man satisfactorily into employment a very carefully thought out training scheme must be evolved, and those inside the organisation must be able to feel that they themselves, if they possess adequate mental qualifications, have an equal chance of benefiting by the special training facilities provided for the arts graduate. In large organisations this is not too difficult to arrange but in small companies the difficulty may be quite serious.

Training after entry

I have already mentioned the difficulty which may be caused by the growing tendency in industry to insist on some technical knowledge in all branches of the sales and administrative staff. This, however, is to some extent being met by the experience of certain concerns particularly in the engineering industry, who have found that it is quite possible to train an intelligent man who has an interest in the subject to become at least a semi-technical worker, even though he has had no scientific or technical education.

It is beginning to be felt that a science or engineering degree may not be necessary for a works manager and that the industrial experience and knowledge which such a man requires, can, especially where a firm has adequate training arrangements, easily be acquired in the time between his entering industry at 22 or 23 and achieving works manager status at probably not under 40 years of age. It may well be that the shortage of manpower will lead to important experiments in this direction. The process would obviously be facilitated if the trainee already had some knowledge of basic scientific principles.

Future demand for graduates

Finally there are factors which will almost inevitably increase the intake into industry from the universities. Under the system inaugurated by the Act of 1944 the more intelligent of the children will be creamed off at various points in their education, the best passing through secondary and grammar schools into universities with scholarships. This will mean that, even more than in the past, only

the less intelligent will be finishing their education at the end of the compulsory stage, and firms who desire to keep up a high standard of ability in their staff, will be compelled to take more men from the universities than they have done. There are also certain developments in industrial employment which will facilitate this. One is the considerable increase of interest in personnel management. This perhaps more than any other industrial function calls for a wide outlook, social adaptability and a broadly based education.

The same applies to the export field. It is becoming more and more realised that the export trade cannot be satisfactorily developed except by maintaining a responsible and well qualified British staff in the overseas markets. This requires in those sent abroad for the purpose a high degree of initiative and a high sense of responsibility. There is little doubt that such qualifications are likely to be found in men who have passed through both school and university education with credit, but such men must, of course, be given the necessary technical knowledge by some special training in the firm. What is needed, therefore, on the side of industry is a realisation of the need to bring in university trained men of broad education, and of the necessity for providing careful methods of selection and industrial training for the purpose.

Value of general degrees

I referred just now to the view taken by many industrialists as to the importance of the subjects studied by an arts graduate from the point of view of his employment in industry. The existence of this view I think suggests that the arts courses as hitherto provided by the universities are not ideal as a preparation for the future career of the student. It is remarkable that all over the English speaking world there is at the present moment a good deal of discussion and controversy regarding the deficiencies of university education as it existed before the war, the view generally expressed being that the scientific courses were too specialised and paid too little attention to the development of general knowledge and intelligence, and that the arts courses were too scholastic and left the student without any adequate idea of the physical and psychological bases of human life and the history of scientific and philosophic thought. The industrial

view which I have mentioned is in line with the general feeling of doubt and it seems highly probable that if the universities were to develop arts courses, which, though each might be based on some special study such as history, classics, modern languages, economics, or philosophy, were aimed much more at relating the special subject studied to the problems of modern life and were also linked up with some study of general science, the result might be to produce a man whose value to industry would be much more readily appreciated. It is of course fully realised that it must continue one of the chief functions of the university to carry every form of intellectual study to the furthest possible point of scholarship and research. The abandonment of this function would be a serious blow to human progress, but from the point of view of industry it might well be best if such forms of specialisation were relegated to post graduate courses, the preliminary degree course being made very much more general and aiming much more at producing an all round man with a general understanding of contemporary problems, social, philosophic, economic and scientific, and a general appreciation of the current state of knowledge regarding them. It will of course not be easy to devise courses (lasting, say, 2 or 3 years) which would be sufficiently comprehensive and thorough and yet within the compass of an ordinarily intelligent student. But if the attempt were (as it should be) associated with a policy of broadening the basis of public and grammar school education, the difficulty should not be insoluble. At any rate I feel it very necessary that the attempt should be made.

Industry is becoming daily more complex both in its material functions and in its human organisation and it becomes daily more important for those engaged in it to realise its responsibilities as a form of public service. If the managers and leaders of industry are to be able to fulfil these responsibilities, it seems urgently necessary that they should be men and women of broad education and mature judgment, not solely specialists with a high degree of capability in a limited function. There will of course always remain the difficulty of fitting the graduate, who has received this new general education, into an industrial organisation. I do not think that many industrialists now hold the view that the university should attempt to teach strictly commercial subjects. The general depreciation of the Bachelor of

Commerce degree seems to confirm this view, but the experience arising out of the Ministry of Labour's Business Course suggests that either the university or the technical college may, without lowering the standard of degree courses, be able to do something to ease the passage of the arts graduate into industry.

Lessons of Business Training Courses

These three month Business Training Courses of the Ministry of Labour aimed at giving the demobilised man who had had no previous experience of business a general knowledge of the background of industry and commerce, and of the broad lines of industrial and commercial organisation. The course had to be improvised at short notice and carried out on a large scale all over the country with very inadequate resources in the way of buildings and teaching staff. Nevertheless it appears to have proved successful and the general opinion of those who passed through it has been favourable. So much so that arrangements are being made under the auspices of the education authorities for a new permanent system of three-term courses of training in the principles of business administration. If such a course could be taken by arts graduates intending to pass into industry and commerce as a post-graduate course (and I incline to think that something shorter than a three-term course would suffice), it would, I feel, be very much easier for industrial firms to absorb them into the managerial ranks. Neither universities nor colleges can teach a man his job in industry, but there is a wide range of important subjects which an industrial manager has to learn, and which he will only pick up very slowly in the course of his industrial employment. A man who had taken a broad training at the university, embracing perhaps History, the principles of Economics, Psychology, General Science and English (including not only the power to write, but the power to speak, effectively) and had followed this with a short course in the background and general principles of industry and commerce, would surely be justified in expecting a ready acceptance by industry under some suitable scheme of further training and should have a reasonable chance of getting to the top, without incurring any jealousy from those who had not devoted an equal amount of time and money to their general education.

THE TEACHING OF HISTORY

Some notes on the teaching of history at a university.

By E. L. Woodward

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These notes are mainly about Oxford for the obvious reason that my first-hand experience of the teaching of history is limited almost entirely to this one university. I shall also speak about teaching in a final honours school. I am not competent to say anything about pass schools and I cannot deal here with the important (and, in Oxford, controversial) question, what kind of examination should precede work for a final school. At Oxford this first examination has not, as in most universities, the full status of a Part I in a two-part school; the average undergraduate therefore, after his first year, has no other university examination until the final school. Apart from this difference, for which there are local causes, the curriculum at Oxford is much the same as at other places. It covers the whole of English history. It includes the study of a reasonably long period of general history, a certain amount of political science (of which I shall speak later), and a special subject for which original authorities are prescribed. The special subjects are chosen from European and American as well as from British and Imperial history. In the later periods of general history questions are set on American history. It would not be difficult to fit into the syllabus a paper wholly on the history of the United States. I think, however, that it would have to be taken as an alternative to the general history period.

By long-established tradition the school is run on democratic lines. There never has been a governing *coterie* of professors. The regulations are made by the elected Board of the Faculty, but the Faculty as a whole has regular meetings; these meetings, especially in recent years, have been much more than formal, and the Board has tended to act on the principle that "what touches all shall be approved by all." Thus there is a continual and healthy criticism of detail, and also a broad general agreement on fundamentals.

It is possible that, while we allow due time for general history, the strongest feature of our school is the importance which we give

to a full-length study of English history. This long stretch of reading gives undergraduates elbow-room in which to learn the character of historical change. Such an understanding is perhaps the most valuable and the most permanent benefit which the average man obtains from an honours course. It remains with him after he has forgotten most of the detail. It can suggest to him tolerance and moderation: it is a warning against extravagant hopes of change or obstinate resistance to it. Moreover "elbow-room" is room in all directions. As he reads English history, an undergraduate has time to discover and develop special interests and to follow them from century to century. Thus we hope that we can keep this continuous study, although, as I shall point out, it can be kept only by making certain sacrifices. These sacrifices, or rather changes of emphasis, seem to me to matter less because they would in fact correct one of the weaknesses of history, medieval or modern, as a study for undergraduates. This weakness can be illustrated by a comparison with the method of the Oxford " Greats " school, where two short periods of ancient history are studied intensively. A close study of this kind tends to suffer from a lack of historical perspective, but it has the immense advantage of allowing concentration not only upon original authorities but also upon the greatest masters of historical writing. After Thucydides and Tacitus the historical writers of the medieval or modern age seem jejune and poor. Indeed from the time of Ammian to Bacon's superb account of Henry VII there is scarcely anything which touches the standards reached by the best Greeks and Romans. Such a lack of historical work of adult genius is a serious drawback from an educational point of view.

The difficulty might be less acute if the secondary authorities were of a higher order. Unfortunately this is not the case. I do not mean that the standard of writing today is low or that the scholarship is poor. I mean rather that up to a certain level historical writing has lost a great deal of its difficulty. It follows that, by doing what he is told and obeying the rules laid down by the pioneers of the nineteenth century, a well-trained student of reasonable ability can hardly fail to produce something which is a contribution to learning, and yet is otherwise nothing at all. The shelves of our libraries are filled with books of this kind. They are the staple of undergraduate

reading. Time and again as a teacher I have found undergraduates whose interests have been blunted by books which they cannot neglect and at the same time, cannot endure.

What is the answer to the problem? The answer is not to ask for textbooks or monographs of genius, or to postulate another Maitland and another J. R. Green. We cannot draw out Leviathan with a hook; we are unlikely to hasten the coming of a great historian by changes in an examination syllabus or in the regulations for post-graduate degrees. What we can do is to make more use of the first-class original and secondary material which we possess. Since we can restore the element of distinction to historical studies only by bringing the student into touch with work of the highest quality I am sure that we ought to combine at least to some extent literature and history. It has always seemed to me a misfortune that the teaching of modern history at Oxford was originally associated with the teaching of law, and not, as in ancient history, with the teaching of literature. The result has been too great an emphasis upon institutions. As things now are, it is, for example, necessary for an undergraduate aiming at high honours to know a good deal about the development of royal justice and the early history of representative government. He need not know one line of Anglo-Saxon poetry or have read any of Chaucer's tales. Town charters, manorial documents and the origins of the Cabinet are poor fare for undergraduates if they are not taken as part of a balanced diet. The balance could be redressed —above all in English history—by a much wider reading of imaginative literature. I should like to apply the same principle to the teaching of French and German and Italian history. The study of art and architecture is another corrective, but is less suited to the needs of the average undergraduate because it requires a more specialised technical apparatus and perhaps (I am not certain on this point) a less common type of imagination.

I have said nothing about a philosophical interest in history. Here again, if I may judge from my own experience before and after I became a university teacher, I think that there is something missing from the Oxford History School and I doubt whether in this respect schools in other universities are any better. Historians are not very willing to scrutinise the assumptions which they make in writing

history. A good many undergraduates—more, I believe, than is commonly supposed—are worried by this lack of speculative interest and miss the sharp formulation of questions which they might learn from teachers with some philosophical training. For myself I wandered about in mazes where more systematic minds would easily find a way. I was bothered by elementary problems about the succession of events in time, and in my day-dreams began to consider the question of causation. " Causes " seemed to be unstable things. An accident in 1066—the arrow which hit King Harold—became an epoch-making event as it receded in time and carried with it the history of Anglo-Norman England. A slight variation in the wind, a movement of the hand of the man who shaped the arrow, a bowstring imperceptibly less taut—and all subsequent history would be different. But why single out any one cause rather than any other ? Causation in history thus grew larger and larger but also fainter and fainter, like the grin of the Cheshire Cat—until the whole cat disappeared behind it.

I can see now some (though not all) of the fallacies which disturbed me, but I also know that in my confused way I was dealing with real problems—problems of which I had become at least aware in my own introduction to logic. It does not seem to me sensible that, if history is to be a main vehicle of education, such problems should be eluded by those who teach it to undergraduates. This gap is less serious at Oxford than it was. The younger generation of historians is less inclined to be content with the deceptive simplicity of Ranke's phrase about recounting 'what actually happened'. There is now in the Oxford examination a general paper which allows scope for a man to read widely on these philosophical questions ; even so a more systematic treatment of the subject is necessary. It is true that political philosophy—under the title of political science—is recognised as an independent subject in the History School. For a long time the subject has been studied with reference to several dissimilar texts : Aristotle's "Politics", a part of Hobbes' "Leviathan", and Rousseau's "Social Contract" (and over many years, Maine's "Ancient Law"). I do not think this choice satisfactory. Aristotle in translation for men who know no Greek history is almost misleading; Hobbes ought to be read with more knowledge of contemporary mathematics and theories of matter than an undergraduate can be

expected to possess. Maine is the best of these texts for its purpose because it gives at least a clear picture of the employment and value of the historical method. For the rest " political science " consists of a number of elementary definitions of political terms, and, for anyone who cares to undertake them, a few books on well-worn theories of political obligation. The ordinary undergraduate is not much encouraged to undertake such reading by the almost open contempt with which professional philosophers in other schools of the university treat this branch of their subject.

Here I am sure that undergraduates reading history would gain from an introduction to sociology. (There is not as yet a professor of sociology at Oxford.) I believe that sociology would also gain ; the quick common senses of undergraduates—who do not realise how much they teach their tutors—would knock a good deal of Teutonic pomposity out of the subject, while the hard core of sound and most enlightening sociological knowledge would provide an answer to all manner of questions which a historian can ask but has not learned how to answer. I can remember how much Veblen's " Theory of the Leisure Class " taught me ; among other things it gave me the key to chapters of Aristotle's " Politics " which were otherwise unintelligible. There are more books of this kind now than there were thirty years ago. A new knowledge of society has arisen, but as yet it has made little impact upon the political theory taught in our History Schools.

So much then for curriculum. I must now come back to the sacrifices necessary if we are to keep the whole length and range of English history as a main feature of our History School. Unless we increase the period of study from three years to four, we must give up something. Such an increase is, unfortunately, not feasible though it might have been if historians had put forward their case for it two years ago.

We must therefore do the best we can with three years. The remodelling of our teaching of theoretical subjects can be done without making more demands upon an undergraduate's time. It is rather a question of using to better advantage the time now available, and—to put it bluntly—bringing more into line with the thought of today our choice of questions for study. The division of general history into

nine or ten periods is also satisfactory, though at present our latest period (1815—1914) is too long, and there are cogent reasons why this study should be brought down to 1939. Our list of special subjects is adequate; it suffers a little from the exigencies of professors (I suspect this defect to be fairly general) in projecting their own interests into an examination syllabus for undergraduates. Hence if we want to include literature—the reading of literature, not handbooks about it—we can do so only by a change of emphasis in our syllabus of English history. A change of emphasis obviously means giving up something. I have already suggested that a good deal of our study of constitutional history is dead wood, or at all events, dead wood to undergraduates; we tend to carry too much learned controversy into our teaching, and to burden our pupils with it. If we are bold enough to cut out most of this erudition, we shall leave time enough for the reading of literature.

So far I have considered the teaching of history at the undergraduate level. What of the more complicated question of post-graduate research? In the organisation of "advanced" research —the choice of subjects and supervision of candidates for a doctorate— Oxford is now as well-equipped as other English universities. This was not the case twenty years ago. We are, however, still as uncertain as other places about the best way of dealing with a student who can spare only a twelvemonth after taking a B.A. My own experience with such students convinces me that in most cases—I would not say in all cases—a continuation of more general studies at an advanced level is better than the composition of a thesis on a very limited field. I believe that this concentration on a thesis would be an excellent thing for graduates—especially school-teachers—ten to fifteen years after going down from the university, if there were ways of solving the difficult economic problem of getting them back for a year in mid-career. I think that in the fourth year after matriculation most young students would be better employed in learning about the matters which they have studied all too hastily. My opinion is reinforced every year when I have to suggest thesis subjects to candidates who choose them not because they are interested in one thing rather than another but because they want something which "has not been done before".

We are now trying at Oxford, not in the History School but in Modern Greats, an experiment in a post-graduate examination. Much thought has gone into it, and I believe it will succeed. The experiment is not entirely new; the Law School has long conferred a post-graduate degree after a written examination. It may be that I am specially interested in this experiment because I see in it the best method of studying the subject of international relations. I regard a widespread study of international relations as a political necessity—I should even call it an intellectual counterpart of compulsory military service. At all events, it is unreasonable to impose military service upon the young men of an educated community without at the same time giving them an opportunity for inquiring why military service should be necessary. On the other hand a study of recent international relations—except in general outline—is better suited to post-graduate than to undergraduate work because it requires so much background knowledge. The advantages of a historical approach to this study are too obvious to mention. I do not want to force any branch of learning upon teachers or pupils; a post-graduate History School ought to have a number of options. It should provide opportunity for introducing, at a more suitable stage, the detailed study of administrative and institutional history for which there is less room in an undergraduate curriculum. It certainly should allow equally detailed study of what may be called the historical forces determining the present political and economic situation of the world, or, to put the matter in another way, it should allow an analysis of the contemporary world in terms of history. History is only indirectly a form of social medicine. If it is "pointed at" anyone or anything, it ceases to be history. It is no more a guide to citizenship than it is a guide to success in business. Its lessons are in the impermanence of things and in the blind, inexorable retribution which follows pride, cruelty, cowardice, and sloth. Its consolation is in an understanding of the tragic nature of life. Nevertheless, like astronomy, it has certain practical applications. Today, when right decisions in politics may well mean the difference between life and death for civilisation, it would be as fantastic to neglect those practical uses as to ignore the aids to navigation which astronomical instruments provide.

These things are relevant to the final matter upon which I should like to say a word; our methods of teaching. I need not speak about

the tutorial system, since this is discussed elsewhere in this number. Anyhow, as far as my experience goes, the difference between Oxford and Cambridge and other English universities is less than is commonly supposed. It has always seemed to me that the members of the teaching staffs, for example, at Liverpool or Manchester know just as much about the character, interests and capacities of every one of their honours candidates as an Oxford college tutor knows about each of his pupils. In this personal knowledge lies the test of a system of teaching. Subjects may recur, but pupils never, and within limits the approach of undergraduates to the subject-matter of history must be different from the approach to the physical and biological sciences. Freeman once said, in his dislike of historical dilettantism, that unfortunately history had no technical terms. History has, in fact, a large number of them, but it has no formulae. The English tradition of writing and teaching history may, as I have suggested, pay too little attention to certain obvious philosophical problems; it has saved us from over-abstraction and schematizing. Indeed it is amusing that throughout his life, Lord Acton, with his head full of the Munich school, never fully realised that there was an English historical tradition which in many respects was better than the much-vaunted Teutonic professionalism. One might say that a page of Firth is worth a volume of Spengler. The close and easy relations between teachers and pupils have done much to maintain this healthy state of mind. English teachers of history at universities might gain from more acquaintance with the mechanics of instruction; a course in voice-production would be an advantage to five out of six university lecturers. On the whole, however, teaching at an English university is regarded more as an art than as a science. It is perhaps nearest to the art of portrait-painting, although we cannot be quite sure whether we are painting a portrait of the past, or of the present, or of our pupils or even of ourselves.

SCIENCE: ACADEMIC AND INDUSTRIAL

By Michael Polanyi

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I shall deal here in the first place with chemistry. In that field lies my own experience, and I know that the relations between science and technology are not quite the same for other branches of science.

Chemistry contains much that is pure theory. It pursues, for example, speculations on the nature of the chemical bond which can hardly give much guidance in the practical task of preparing new substances, still less to any process of manufacture. There are on the other hand most fascinating branches of chemistry concerned with the synthesis of useful products such as vitamins, drugs or colouring matters, in which there is often no difference between science and technology. Of the neighbouring branches of science, the study of physics and mathematics resemble the more theoretical parts of chemistry, while in engineering—whether mechanical, electrical or civil—there is a coincidence of science and industrial practice more complete even than in the most technical branch of chemistry.

Where a difference exists between science and technology, it arises from the fact that science is always systematic while technology is only systematic in patches. The scientific method can serve almost any practical problem—but only up to a point. The university professor entering his laboratory in the morning is faced with problems of a different kind from those facing the factory manager when starting his day's work. The professor looks forward to a crop of observations, ideas and calculations, which may result in a modification of the existing system of accepted knowledge. The manager may also want to find out new things, namely new ways and means to produce more efficiently and to this purpose he may apply the systematic and critical methods of science, but his aim lies beyond that, in the satisfaction of human needs. Consequently, he will not pursue science as the professor does. He will not carry scientific research

beyond the point of visible (or at least very probable) usefulness. Once he has found out enough to deal with the practical problem in hand, he will abandon his investigation irrespective of any questions still open, however great their scientific interest. Moreover, he will very often find it necessary to act before having completed the scientific analysis of the circumstances underlying his decision. This is widely true even in respect of purely technical matters. We would have no beer, no dyed cloth, nor even glass, if craftsmen had waited for a scientific elucidation of the processes involved in manufacture. Even such modern things as synthetic petrol and artificial rubber are being made today without any precise understanding of what happens in the process. Technology in general, and chemical manufacture in particular, depend largely on empirical methods. The practice of these methods is often greatly assisted by a background of scientific training, but this is only one among a number of helpful factors.

The mastery of an empirical art depends more on practical experience and on a keen perception of the day to day needs of men. This situation leads to various problems between universities and industry. Sometimes universities are reproached for neglecting the teaching of technology and for conducting their research on lines devoid of visible practical interest. They are asked to teach more industrial chemistry and it has been suggested that research students at universities should be regularly given industrial problems to work on. Such demands are unreasonable. University teachers cannot be masters of the technical arts which they do not themselves practise. Technology taught at universities is always in danger of resembling the kind of anatomy which was taught before Vesalius, by professors who had never made a dissection with their own hands. A practical art which universities can teach well is that of healing, for hospitals can be established in universities; but you cannot run, in the same way, dozens of different factories in a university and hence it is no use asking universities to give a full training in technology. They could only neglect their own task in order to do another task badly.

But there are other problems arising from the divergence of university and industry to which we may try to find an answer. It is a serious fact that students from universities go into industry

without much enthusiasm for their profession—that the very best of them often leave their hearts behind in academic research. Up to a point this seems inevitable. You cannot train students of science to a higher level of understanding except by teaching them to love science, for loveless understanding bears no fruit. But it is equally clear that when entering industry the university graduate must cease to be a full-time devotee of science and seek satisfaction in the pursuit of other than scientific problems; he must transfer his emotions from the academic to the industrial field. Otherwise he will feel lost and miserable in industry, for instead of looking forward to his work he will be hankering after his student days and tend to lose his intellectual self-respect. Such people demoralise their colleagues and spread perversion throughout the fabric of the academic and industrial communities.

It is hard to see how these difficulties can be entirely avoided, but the universities could do much more to meet the needs of the situation. They must discover new ways of cultivating and satisfying the industrial scientist's love of science. They should regularly arrange suitable courses and conferences for graduates in industry. This is not so much a question of special courses in the use of some new technique such as X-ray analysis, infra-red spectography, micro-analysis or electron microscopy. These are very valuable, but they do not quite fulfil the purpose which I have in mind, namely of satisfying a broad interest in science. I am thinking of courses and conferences on more general subjects, such as have recently been arranged in Manchester. Ignoring the earlier phases of our experiment, I shall give a picture of what we tried here in August 1946.

Manchester Course

Our Advanced Course extended over a fortnight from Monday of the first week to Friday of the second. The subjects of the lectures were chosen primarily for the intellectual pleasure to be derived from them. Such pleasure is of three kinds. There is the aesthetic pleasure of seeing a great system of thought unfolding from a simple set of fundamental premises. Second, there is the pleasure of intellectual mastery over experience, which increases with the wealth of phenomena brought under the mind's control and with the degree

of precision to which that control is achieved. Finally, there is the satisfaction derived from the human importance of the subject which the mind is mastering. Beauty, power and human relevance—all three present together—mutually enhance the enjoyment given by each. Such is the case in the study of chemical theory, consisting in the application of atomic physics to the process of chemical change. Our Advanced Courses were given on this theory and its experimental foundations.

Here I must say something about the audience which attended these courses. The number of participants was 133, of which over a hundred were industrial employees who had been given a fortnight's leave by their employers. I believe the great majority had their fees also paid by their firms. There was a fair number of teachers from technical colleges and a few from schools and universities. About eighty were from places outside Manchester and most of these lived together in one of the university's Halls of Residence for the period of the course.

It took about two or three days to establish contact with the audience many of whom had not expected to be taken straight to the foundations of modern atomic theory. The first reactions caused some misgivings to the lecturers, but soon enough a new current swept through the audience and raised demands for a more and more fundamental treatment of our subject. By the time we entered on our second week, it was clear that most of the audience was roused to a realisation of new and exciting intellectual possibilities. They were discovering a way to understand a great many ideas only vaguely heard of before, which, if properly absorbed, might completely change the background of their thinking on chemistry.

This mental opening up was greatly assisted by the weekend programme which linked together the two weeks of systematic lectures. Saturday was filled with a One-day Conference of a somewhat novel type—as developed during recent years in Leeds and Manchester. Such One-day Conferences—held annually since 1943—are devoted to some section of chemistry which happens to be in lively development at the time and in which the university laboratory convening the Conference is conducting investigations of its own. A series of short papers is presented which surveys the foundations of

the field and summarises the main results of recent developments with particular emphasis on the work of the speaker. Most speakers presenting papers to these conferences in Leeds and Manchester were members of the academic staff, but there was always at least one (out of about five) who belonged to an industrial laboratory. Attendance has been increasing year after year, and in 1946 it rose to about 180, which included this time the 133 members of the Advanced Course in which the conference was inserted as a weekend programme.

I should mention three details in the running of Advanced Courses which, from our experience, I consider to be indispensable. (1) At least one lecturer (but preferably more) should be present at all the lectures and take part in all discussions. (2) Universities should not try to rely on their own staff alone, but should invite distinguished lecturers from other universities as well. In Manchester I had the full partnership of M. G. Evans of Leeds, while E. G. Cox (Leeds), H. W. Thompson (Oxford) and A. D. Ritchie (Edinburgh) each gave a short series of lectures. (3) Lecturers should be well paid. It is quite easy to finance this expenditure from the fees collected for a really attractive course.

No one who took part in the Advanced Course, or even only in any of our One-day Conferences, could fail to recognise that a live need was satisfied by these meetings. This was confirmed by the answers to questionnaires sent out subsequently to all members of the audience. I believe that after the fortnight spent at our Advanced Course, many an industrial chemist found himself able to read with understanding a whole series of publications which previously would have deterred him by their use of modern theoretical conceptions. For some the stimulus might well have made the difference between continuing or abandoning further efforts at self-education; the difference, that is, between assuming an active and self-respecting mental attitude or giving way to a passive, complacent or resentful state of mind. But the most important advantage derived by most participants was the strengthening of their taste for the intellectual pleasures of science. They were refreshed by a renewed participation in the academic fellowship, and left with the feeling of remaining part of that fellowship. The experience restored to some,

and strengthened in all, the internal harmony between their scientific background and their dominant day-to-day practical interests.

In performing this task, a university is not going out of its own way. It is merely undertaking an additional form of higher education, and one yielding returns distinctly higher than usual. For there are few in such an audience as attended our courses who would not eagerly absorb every word of the lecturer—and not for examination purposes, but for the sake of acquiring knowledge. Moreover, by talking to men whose special knowledge is often on the highest level, university teachers cannot fail to discover hitherto unnoticed implications of their subject. They are enriched also by hearing of industrial experience, which often does keep on record certain odd facts left unheeded by academic science. And above all, the response of men of mature age may restore to the academic teacher a fuller consciousness of the values of which he is the guardian. It may remind him that science is not merely the don's fad and the student's grind—but a major part of man's intellectual life, which is essential to his life as man.

The advance course given in August 1946 in Manchester was recently repeated under the chairmanship of Professor M. G. Evans in Leeds. The attendance was smaller than the year before but the participants seemed to have come with a clearer understanding of our purpose. The meetings have convinced me even more firmly that there lives among industrial scientists an intensive scientific interest seeking to be satisfied, and that this desire should be systematically met by the kind of course which I have described.

A NEW UNIVERSITY COLLEGE

A proposal for North Staffordshire

By T. Horwood

Alderman and Vice-Chairman of the Exploratory Committee appointed by the Council of the City of Trent.

The proposal to establish a University College in North Staffordshire is not a recent one. In 1900, after many university Extension Courses, a local Council was formed for the promotion of Higher Education in North Staffordshire. Its ultimate aim was the foundation of a University College. In this it was unsuccessful and the Council was dissolved in 1906. The present North Staffordshire Technical College took over the site that had been chosen. But the promoters of the University College proposal kept as their memorial a strong and living movement in adult education which to-day is responsible for nearly two hundred classes, some of them of university standard.

The special character of the area has been moulded by the evolution and concentration of the Pottery industry. (In 1939, of 400 Pottery firms in this country, more than three-quarters were to be found here, employing over 80% of the people engaged in the industry.) The North Staffordshire Technical College and the Burslem School of Art, both of which are likely to be extended, have achieved distinction through their special attention to Pottery, and the local education authorities, in association with the Ministry of Education, are now planning a National School of Pottery. It is natural, therefore, that the suggestion for a University College includes special attention to the study of Chemistry as a necessary basis for the further study of Ceramics. Nevertheless, it is felt that the institutions of higher education in the area and the University College should be complementary and that the interchange of students and the contacts between staff should be made as easy as possible and encouraged.

From these facts emerge the three-fold foundation of the present proposals—a localised industry, a wide range of social problems in an industrial area and a deep-rooted and flourishing movement in adult education.

Curriculum

In addition to this desire to take advantage of the particular features of the area by emphasis on the study of chemistry, the new University College would aim to provide a curriculum which would be an experiment in correcting the prevailing departmentalism of university teaching. Closely related to this and to the proposed emphasis on social studies are three important aspects of the present plans. First, that the courses offered should be framed particularly to secure the provision of first-class teachers for the new type of Secondary Modern School. The Modern Secondary School, as has been well said, has before it a unique opportunity but it will only be able to grasp it if it can attract teachers as especially prepared for their work as Grammar Secondary School teachers are for theirs. Secondly, that they should contribute towards filling the widely felt need for workers in the fields of public and social administration who would possess, besides their technical qualifications, that wider background of knowledge which is as essential to-day as it was in the past. Thirdly, that the strength of the voluntary adult education movement in North Staffs. makes such a University College particularly suitable for a rather larger proportion of places than is normally the case for Extra-Mural Scholars and the " more mature students " for whom the Ministry of Education has recently made scholarship provision.

The curriculum, as at present proposed, will be subject to the available resources of university teachers. With this proviso it is desired to start with Professorships, Readerships and Lectureships in the following :

(*a*) *Social Studies* : (Sociology ; Economic Theory and Institutions ; Political Theory and Institutions ; Psychology ; History and Theory of Morals).

(*b*) *Arts* : (History ; English Language and Literature ; Modern Languages and Literature — French, German and Russian Philosophy (Methodology) ; Mathematics).

(*c*) *Physical Sciences* : (Chemistry ; Physics ; Biology ; Geology).

In his intermediate or general course each undergraduate would be required to take one from each of the subjects grouped under Science, Arts and Social Studies. Those wishing to take a General Degree would then proceed to specialise in any two of these subjects. The Honours Course would in the first place be confined to one or two subjects

which might be chosen from Physical Science (Chemistry : Physics), Arts (History : English Language and Literature), or Social Studies (Economic Theory and Institutions ; Political Theory and Institutions). The aim in all the courses, and especially in those recognised for honours, would be to ensure that the student could be taught to see things together while at the same time learning, from intensive work in one particular subject, the lessons of hard disciplined thought. It would be essential for this that there should be an attitude of educational co-operation among the staff and all the departments of the College. Also that a serious attempt should be made to establish these aims in both the general and honours courses and also to ensure that the general courses are not merely intended for those students who are not regarded as good enough to take an honours course.

Sponsorship

It would be difficult to achieve these special aims if the courses at the College had to be determined by the examination system of another university. Rather should the examinations for degrees conform to the teaching which the College offers. Only in this way will it be able to enjoy the freedom to experiment or to strike out on lines suited to the period in which it is established and to its own peculiar environment and educational opportunities.

On the other hand the authors of the present proposals do not wish in any way to avoid a period of tutelage similar to that experienced by other recently established University Colleges. They regard it as of prime importance that the standards of work should have a relation to those of the existing universities of this country. With this end in view they are at present discussing a scheme of sponsorship which would ensure guidance and control in the whole life of the University College and not merely in relation to the examinations. This scheme suggests that sponsoring universities should each appoint two academic advisers who together would form an Academic Advisory Council. The functions of this Council would be :—

(*a*) to approve all higher appointments to teaching posts ;

(*b*) to approve external examiners for the degree examinations ;

(*c*) to receive an annual report from the examiners on the standard reached in the degree examinations, and to forward this report with their comments to the Governing Body of the College ;

(*d*) to make representations from time to time to the Governing Body about the general progress and development of the College.

The last proposal is looked upon as of special significance and it is hoped that, arising out of it, the Academic Advisers would spend some time in residence at the College each year and generally speaking give their attention to those less tangible things of university life which are perhaps of special importance in its early years. It is also hoped that close relationships can be established with the sponsoring universities by means of lecture courses from visiting lecturers and other means of overcoming the 'academic loneliness' which the specialists at the new College might otherwise experience. A further provision which it is hoped will make the period of apprenticeship a greater reality, and therefore safeguard the standards of scholarship, is the limitation of degrees to the Bachelor of Arts. This does not mean, however, that there will be no opportunities for research for both staff and students. Rather is it felt that the subjects on which it is proposed to place special emphasis will make necessary a considerable body of research from the very beginning.

Local Committee

The aim of a close relationship with the locality, and at the same time with existing university institutions, has been attempted from the first by the nature of the local Committee established to explore the proposals. On the 27th March, 1946, an informal discussion with the University Grants Committee took place and on April 17th of the same year the Stoke-on-Trent City Council resolved that the provision of a University College for North Staffordshire be approved in principle and set up an Exploratory Committee with authority to co-opt representatives of other authorities and of academic bodies. This Committee, as established, consists of representatives of the four neighbouring local authorities who have promised to make large financial contributions; the Workers' Educational Association (North Staffordshire District); The University of Oxford; and local persons with wide experience in education. The Chairman of the Committee is Lord Lindsay of Birker, Master of Balliol College.

During the course of its work this Committee has sent representatives to discuss the proposals with the University Grants Committee from whom it has received encouragement, and

with representatives of the Ministry of Education. Recently it has initiated discussions with the Vice-Chancellors of the Universities of Birmingham, Manchester and Oxford in respect of the sponsorship proposals. It has received encouragement from the resolution of the University Grants Committee, communicated to it on the 6th December, 1946, as follows :—

> " That the Committee would consider sympathetically an application for financial assistance in respect of a new University College in North Staffordshire provided that the basis of studies in Science and Arts be adequately broadened. If the scheme is to include the conferment of degrees by the College, the Committee will wish to be satisfied that adequate arrangements have been made for sponsorship by a University or Universities and that the proposal can be brought into line with University policy for the country as a whole."

The proposals for a curriculum outlined in this article are an attempt to meet the request for a broadening of the basis of studies in arts and sciences, while the discussions with the neighbouring universities are an attempt to establish adequate sponsorship.

During the debate in the House of Lords on May 14th last this resolution of the University Grants Committee was quoted by the Lord Chancellor who made the comment : —

> " Here is a new experiment—that the North Staffordshire people should have the right of setting their own examinations, if they do in consultation with and by obtaining the benefit of the advice and experience of some of the older existing Universities—I think they are here called 'sponsoring Universities.' Might not that be an experiment which is well worth making ? "

In conclusion it must be acknowledged that any new institution of this kind must of necessity suffer many disadvantages. It is hoped, however, that some of the suggestions put forward may also present some advantages which can perhaps only be obtained in a new institution. This, however, will only be possible with the continuing co-operation and assistance of at least some of the neighbouring universities and with due regard to the experience of the present body of university teachers. Without the benefit of such co-operation and assistance little progress will be achieved, for the proposed University College can only meet the special needs of our own age to the full if it can draw on the rich experience and lasting values of the English university tradition.

DEVELOPMENT OF A MODERN UNIVERSITY

The University of Bristol

By M. Skene

Professor of Botany, University of Bristol

The University of Bristol, which received its charter in 1909, is the second youngest of the provincial universities of England. It started at the outset with the four faculties of arts, science, medicine and engineering, and with a training department for teachers. The traditional branches of higher education and scholarship were made available in the region. The teaching activities of the two great voluntary hospitals were utilised. The requirements of the varied engineering industries of the city and neighbouring centres were met. Links with the rural life of Gloucestershire, Somerset, Wiltshire and Dorset were less close, for no full scale agricultural teaching was undertaken. But a connection with the countryside was established through association, personal and administrative, with the agricultural advisory services and the research stations at Long Ashton and Campden, and was extended, in another way, by the activity of a strong department of extra-mural education.

The buildings of the University College were quite inadequate and only chemistry and some medical departments had modern laboratories. The erection of a main building to house the administrative offices, the faculty of arts, the library, and to provide a hall for ceremonial purposes was undertaken. This was halted half-way by the war of 1914-1918. But after 1919 recovery was rapid and the new building with its imposing tower was completed in 1925. Much needed space was released for the scientific departments. The university could feel that it had found a spacious home.

But the scientific departments were still ill-housed, largely in inconvenient converted classrooms. To remedy this a new building, on an ambitious scale, was erected on an adjacent site for the departments of physics and mathematics and was opened in 1927. The departments of pathology and medicine were removed to a converted hotel, which had been in use as a hall of residence for men. Again the remaining departments were given more elbow room. Finally, there was completed in 1939 a fine new wing for the two

biological departments and a new library wing. At this date plans were in preparation for a new medical school, to house the scattered medical departments.

Halls of residence

The University has always provided residential accommodation for its students. A hall for women, Clifton Hill House, was established in two large 18th century houses with pleasant gardens. The way in which it developed was important. The hall of the modern university cannot imitate the college with its teaching activities. But it must succeed in making mutual education an actuality and, through the influence of its high table and common life, it must inculcate the habits and ideals of a cultured society. Under its founder and first warden Miss May Staveley, Clifton Hill House achieved these ends, acquired a character far removed from the institutional and became something of a mould of form for its kind. In the early twenties there were also two residential halls for men, one in a converted hotel and the other in a large house in Clifton. It became the policy of the university that all students not living at home should spend at least two years of their time in hall and, to make this possible, two new halls were built. Wills Hall, on the edge of the Downs, houses some 120 men in study bedrooms. It is built round a quadrangle, on the staircase system, and has extensive grounds and an open outlook. Manor Hall, adjacent to Clifton Hill House, takes 100 women. Both were completed in the early thirties. In 1938, of the full-time students at the university 47% lived at home and 36% in hall. As the remaining 17% were mostly senior men and women who had already spent one or two years in hall the aim as regards science had been reached.

Students' welfare

The unity of the whole student body, the idea of the university as a society, has been secured by compulsory membership of the Union. This is a self-governing body, but continuity and unobtrusive guidance are ensured by the presence on the key committees of a number of members of the academic staff. The Union embraces on the one hand the Club, occupying a remodelled set of assembly rooms with concert hall, refectory, common rooms and so on, and on the other the

Athletic Union which has adequate grounds two miles from the university. A single subscription entitles every student to all these amenities.

Towards the end of the thirties further provision was made for the care of student health. Facilities for quick exercise were provided close to the university and a lecturer in physical training was appointed. Full time medical officers made possible the regular medical inspection of all students. In care for the material well-being of the student and in the opportunities made for developing a full social life the university was in advance of general conditions.

Research work

On the academic side the inter-war years began as a period of consolidation and passed into one where a new scale of work was established. The university started with the right tradition of scholarship and research, the quality of which may be indicated by the names of three principals of the College — Alfred Marshall, W. Ramsay and C. Lloyd Morgan. On the staff there was the essential core of men of individual character and academic distinction, and the others were predominantly youthful, energetic and enthusiastic. The university was small, with an undergraduate body of about 800 and less than 100 full-time professors and lecturers. Thus no great specialisation could be attempted. But special lines of work began to emerge. On the arts side there was research on the local records of a historic city, a growing interest in the history of the commonwealth and the development of social and other surveys of the region. A faculty of Law was established in 1933.

During this period an institution peculiar to Bristol had a profound effect. The Colston Research Society is a body of citizens who meet their university friends socially once a year and who collect funds for the promotion of research. These funds are devoted partly to special objects, partly to the foundation of scholarships and partly to giving grants to departments for the purchase of special apparatus and so on. The work of the Society has been admirable in both its aspects; it is still active and proposes to break new ground.

The erection of the new physics building had decisive effects direct and indirect. It gave space and facilities for research work on a new scale. To make use of these, two research fellowships were

established and were followed by the endowment of a second chair in (theoretical) physics. This development attracted a grant from the Rockefeller Foundation. The work thus set going, and the means available, began to attract workers from outside and the numbers of these and of Bristol students has grown to such an extent that even the great building is no longer large enough.

So great an increase in the possibilities of research in one department necessarily led to further provision for others. The crucial step was the decision to supplement the existing small number of research scholarships by the annual appointment of ten post-graduate scholars. In the course of a very few years this transformed the capacity for research work, as well as the possibilities of advanced training for graduates. The post-graduate population rose from 14 in 1928 to 64 in 1938. At the same time the problem of increasing the supply of first-class material necessary to feed research schools was tackled by the foundation of new entrance scholarships. By 1938 research work in many subjects was expanding rapidly and the small size of the under-graduate population was acting as a limiting factor.

Teaching has followed the traditional course of lecture and laboratory, but the need for individual attention has been constantly in mind. The weekly hour of tutorial work is not possible with a small staff, but various systems have been tried. In the arts faculty each student has a tutor to whom he may apply for advice. In some science departments all students are taken weekly in small groups; in others honours students are given individual tuition. There is no one perfect solution and the practical course is followed in trying various plans within the limits of the material possibilities.

The small size of the staff has made for unity. Provision of amenities has lagged behind that for the student. But the absence of common-room life may not have been altogether a misfortune, for social life on the family level and a wider kind of friendship has been favoured. Unity was greatly encouraged by an early and liberal decision to make all lecturers members of the boards of faculty. Later, fair representation was accorded on both senate and council. As important as harmony within the staff is harmony between staff and the lay members of council, and this was ensured in full measure by the vice-chancellor and treasurer of the twenties. The university

developed a character friendly, almost domestic, which has impressed the visitor and the new-comer.

Post-war developments

In 1944 plans were drawn up for post-war development. These were based on a desire to retain the small and intimate nature of the university with a growth of student population to not more than 1,500 to 1,700. In the next two years it became evident that this would not suffice. There was the insistent call for a major extension of university education, in which the smaller universities, with greater possibilities of reasonable expansion, must play a relatively greater part. There was the necessity of feeding research schools from a larger body of undergraduates. There was the special reason that Bristol, with its residential tradition and its favourable amenities of town and country, was a university which might well aim at full-scale residential development. An expansion to a level of 2,500 to 3,000 was therefore envisaged, and the problem was to accommodate the immediate post-war rush and make possible its transfer to a higher permanent level.

In fact the student body has risen from the pre-war 800 to 2,000 in the coming session, and it has been possible to absorb this large increase without intolerable strain. The pre-war building programme has provided elbow room, especially in arts classrooms ; and internal reconstruction has given greater laboratory space. Certain departments, teaching and administrative, have been transferred to houses owned by the university. One damaged wing has been reconstructed advantageously, and three new buildings, of the temporary kind which combines a plain façade with a convenient interior, have been completed. Two more such are in hand for further laboratories. Four large mansions have been converted to halls and several smaller annexes are in occupation. Within the walls of the burnt-out municipal museum a new and spacious refectory will be constructed along with staff common-rooms. This is a remarkable achievement which will make it possible to deal with 2,500 students.

But at the same time sites have been acquired and plans are being prepared for permanent buildings, so that these may be erected as soon as material and labour are available. There will be two new halls and a building for engineering, geology and mathematics.

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Further science buildings and a new medical school will come at a later stage. The present buildings have been erected by private benefaction. In the future much will depend on public moneys. But it is satisfactory that building endowment funds are not exhausted and, in addition, that the new halls will be provided for by a fund now being raised to commemorate the chancellorship of the Rt. Hon. Winston Churchill.

On the staff side appointments had been made in time to deal with the earlier programme of expansion. Sufficient additional staff has been secured to make it possible to cope with the increased teaching without neglecting the most important role of the university—the re-establishment of active fundamental research in this country.

With an increase in numbers of students and staff new departures become possible. On the whole the policy is to encourage new developments, by the appointment of special lecturers, within existing departments. Examples are lectureships in colonial administration, colloid chemistry, parasitology, psychology. But new chairs have been founded and new departments instituted as in drama, music and aeronautical engineering. The medical school has greatly increased responsibilities for post-graduate education and towards the hospitals of the region and is expanding both generally and along fresh lines. In addition to all this there are two major new departures. An Institute of Education following the lines of " Scheme A " of the McNair Report has now been established and started work in the past summer term. Preparations have been made for the opening of a School of Veterinary Science in the session of 1948-9. In addition to these it is hoped that the future may see post-graduate teaching in horticultural science and teaching in architecture. The strong extra-mural department has recovered the ground lost in the war.

General education

One more topic may be touched on — the question of general education. Broadening of the academic course is provided for by general degrees in both arts and science. How to secure a wider general education for all students is still a matter of debate. The faculty of science recently considered, but did not adopt, a scheme of courses in the arts, philosophy and civics as a part of its curriculum.

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Wider education is important for two reasons. It should provide the student with a cultured background and resources and make him a better citizen. It might also fit him for a greater variety of work, raise his usefulness in a changing society and, a severely practical point, increase his chances of favourable employment. The latter aspect is most urgent for the scientist. His training, if suitably supplemented, should make him invaluable in many positions other than the specialist posts to which he now goes. It is not less necessary that the arts man should have a background of scientific culture. It must be recognised that the problem is difficult with no one solution.

Conclusion

The present position and the immediate prospects of the University of Bristol are then these. By reconstruction and a limited amount of building 2,000 undergraduates are now dealt with and the number will rise to 2,500 in the next few years. This can be done without undue congestion in working conditions, and student amenities have been maintained. In particular the residential tradition has been carried on and plans are laid for its extension. The major new development of the Institute of Education, with all it entails for education in the region as well as in the university is in being. Preparations for a school of veterinary science are far advanced. The expansion in teaching strength and specialisation in medicine, together with its increased responsibilities in the region, amount to another major development. New chairs and departments in the faculties of arts, engineering and medicine open up new lines of studies and, within the existing frame, the growth in staff has been directed to foster new interests. Further ahead are plans for architecture and horticulture.

So large an expansion — threefold in the space of six years — brings one more problem. How can the university maintain the intimate character it had acquired ? That character meant that the individual student was not lost in the crowd and that all members of the staff knew each other. Less tangibly it meant a spirit of unity. To maintain this the residential system is a powerful aid, as is the universal membership of the Union. For the staff the introduction of common-room life will help ; though most important will be tradition and the substratum of continuity persisting in a rapidly changing and growing body.

Winter 1947–1948

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REVIEWS

PHILOSOPHY AND POLITICS: FOURTH ANNUAL LECTURE OF THE NATIONAL BOOK LEAGUE. *By* BERTRAND RUSSELL. (*Cambridge University Press.* 2*s.* 6*d.*)

Those who wish philsophy to fill the vacuum left by the decay of religion will not be encouraged, though they may be instructed, by the rapid review of the principal ethical and political systems which have rested on foundations traditionally called philosophical. Lord Russell trounces Plato, Hegel and Marx (or rather Soviet Marxism) much on the lines of Dr. Popper's "The Open Society and its Enemies," but with his own distinctive combination of crystalline clarity and wit and not without (it must be added) slight unfairness to the motives if not to the language of the victims. It may be that these enjoyable qualities will make it difficult for those accustomed to an imponderous manner to take Lord Russell seriously, but not to do so would be a great mistake. For his point is important and successfully established; it is that the philosophers who have claimed to support political systems or practical ethics with specifically philosophical arguments or proofs have been guilty of "a deep insincerity," because what they have in fact provided have been arguments rational only in name, which can be seen through their intimidating disguise of pretended demonstration to be merely the particular moral or political preferences of the philosopher. Beguiled by Plato's language, we are apt to forget the stupendous arrogance of the claim to be a spectator of "all time and all existence," but Hegel's description, quoted by Lord Russell, of his own philosophy of history as "a result of which happens to be known to *me* because I have traversed the whole field" brings the arrogance home as a warning to those who are deaf to the priest but will listen to dogma in its philosophical disguise.

Lord Russell exhibits the repellent aspect of those political edifices now called ideologies (always authoritarian, intolerant and oppressive) which have leant on metaphysical buttresses and also their (fortunate) propensity to crumble. His method of exposing the "philosophical" propositions which have served as bricks for the buttresses is to translate them into unambiguous Russellian English.

To the claims of dogmatic philosophy that it is possible to determine by philosophical methods, i.e., by deductive reasoning alone, the

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This book is the work of a number of contributors, writing under the general editorship of Sir Ernest Barker. It is designed to continue and fulfil the policy by which the Oxford University Press has already published works on Shakespeare's England, Johnson's England, and Early Victorian England; but it has the wider and deeper purpose of giving a view of the general character of England, not so much at a point of time (though the present time naturally occupies the foreground), as in the whole course of its permanent and long-term operation. While the Present thus stands in the foreground, due account has also been given to the living Past; and while the theme is the character and spirit of contemporary England, history and antiquity have also entered not, however, for their own sake, but rather as explaining the present. The aim of the book is to describe the spirit, or 'character', of England, rather than all the varied material in which that spirit works.

The book, with its distinctive illustrations, forms in a sense a monument to the England of these days.

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nature of man and the universe, and so to provide a *philosophical* basis for ethical or political systems, Lord Russell opposes the empiricist philosophy of which the principal contention is precisely that this cannot be done. He draws an illuminating parallel between Liberalism in politics and the insistence of the empiricist that the only method of establishing fact is by observation and experiment, of which the sciences offer the best examples. Conclusions about matters of fact, whether required for politics or for science or every-day life must always be tentative, open to review and therefore to free discussion and criticism in the light of agreed procedures and standards. There are no philosophical short-cuts. These are the tenets common to the Liberal and scientific outlook with which dogmatic philosophy and the ethical and political systems it has sponsored have been perennially at war. Liberalism is indeed empiricism in politics, but not in the sense that it rests on propositions about the world established by the empirical philosopher. For it is concerned, as Lord Russell says, " not with *what* opinions should be held, but how opinions should be held "— words which might also serve a modern and more modest description of philosophy.

No doubt in detail and in practice Lord Russell would make most of the concessions to the need for State intervention and centralization which the democratic socialist in this country would demand. Certainly without such concessions his conception of politics is scarcely applicable to current circumstances. But he has shown with vigour that there are no *philosophical* arguments against the principles of liberal democracy, and thereby provided the only possible philosophical argument for them. HERBERT HART.

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